HYDROLOGICAL DATA FOR LAKES AND WATERSHEDS IN THE MUSKOKA–HALIBURTON STUDY AREA (1976–1980)

W.A. Scheider, C.M. Cox and L.D. Scott

DATA REPORT DR 83/6

DATA REPORT SERIES

The data presented in this report were collected by staff of the Water Resources Branch of the Ontario Ministry of the Environment as part of the Lakeshore Capacity Study or the Acid Precipitation in Ontario Study. This unreviewed report does not necessarily reflect the views or opinions of the Ontario Ministry of the Environment.

HYDROLOGICAL DATA FOR LAKES AND WATERSHEDS IN THE MUSKOKA-HALIBURTON STUDY AREA (1976 - 1980)

W.A. Scheider, C.M. Cox and L.D. Scott
Limnology Section
Water Resources Branch
Ontario Ministry of the Environment
P.O. Box 39,
Dorset, Ontario
POA 1EO

Data Report DR 83/6

ALTB

PREFACE

The unpublished Data Report Series is intended as a readily available source of basic data collected for lakes and watersheds in the Muskoka-Haliburton area of Ontario. These data were collected as part of the Lakeshore Capacity Study and/or the Acid Precipitation in Ontario Study.

The limnological portion of the Lakeshore Capacity Study (1975-81) was initiated to investigate the relationships between lakeshore development and lake trophic status in low ionic strength Precambrian lakes. The Acid Precipitation in Ontario Study (1979-present) was initiated, in part, to investigate the effects of the deposition of strong acids on aquatic and terrestrial ecosystems in Ontario. The primary findings of these studies have been and will continue to be published as reviewed papers and technical reports.

ABSTRACT

Hydrological data and the major terms of the energy balances of lakes studied as part of the Lakeshore Capacity Study are presented.

Scheider, W.A., C.M. Cox and L.D. Scott, 1983. Hydrological data for lakes and watersheds in the Muskoka-Haliburton study area (1976-1980). Ont. Min. Envir. Data Report DR 83/6.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

I. INTRODUCTION

This report presents the basic hydrological data collected as a part of the trophic status program of the Lakeshore Capacity Study. A major part of the program involved the development and use of mass balance models to predict the concentration of total phosphorus (TP) in lakes. The mass balance technique utilizes information on the flux of materials through the watershed as the basic information around which a model is built. Quantitative hydrological information is required to construct the mass balances and as an input to the mass balance model.

The components of the hydrologic cycle are related by the water balance equation, an expression of the principle of the conservation of mass. For a lake, this equation can be written as:

$$P + R + G - O - E = S \qquad (1)$$

Where: P = precipitation to the lake surface
R = surface runoff into the lake
G = net ground water gain by the lake
O = outflow from the lake
E = net evaporation from the lake
S = change in lake storage, or volume.

Data to construct water balances were required for four consecutive 12-month periods beginning in June 1976 and for the entire 1976-80 period. The 12-month periods from June to May were chosen as the standard water year for several reasons. Hydrological data collected over the period June 1976 - May 1980 were relatively complete. Mass balance models have been historically used to predict TP concentration in lakes at spring overturn, which commonly occurs in May in the study lakes. Selection of the June - May water year minimizes changes in the water balance resulting from changes in storage since the snowpack is gone and the spring runoff has ended by June 1.

In this report, data collected on each term of the water balance is presented. Water and major ion balances are presented elsewhere (Scheider and Dillon, in prep.).

II. DESCRIPTION OF STUDY AREA

Fifteen lakes were chosen to develop and test models relating lakeshore development to trophic status. Water and mass balances were measured for the 6 'A' lakes (Harp, Jerry, Red Chalk, Blue Chalk, Chub and Dickie). No hydrological data were measured on the 9 'B' lakes (Crosson, Gullfeather, Bigwind, Solitaire, Buck, Little Clear, Walker, Glen and Basshaunt). In addition, hydrological and chemical flux information were measured on 9 'export' streams, chosen to broaden the range of watersheds investigated.

The locations of the 15 study lakes and 9 additional watersheds are given in Figure 1. Watershed boundaries and locations of hydrological gauging equipment are shown in Figures 2-13 for the 15 study lakes and in Figures 14-21 for the 9 export watersheds. Red Chalk, Blue Chalk, Crosson and Gullfeather Lakes drain via the Black River into Lake Simcoe and ultimately into Georgian Bay via the Severn River. Harp, Jerry, Solitaire, Little Clear and Walker Lakes drain via the North Muskoka River into Lake Muskoka and ultimately into Georgian Bay via the Moon River. The drainage of Dickie, Chub, Buck and Bigwind Lakes as well as Paint Lake Inlet 1 and Trading Bay Inlet 1 is also into Georgian Bay via the South Muskoka River, Lake Muskoka and the Moon River. The remaining study watersheds ultimately drain into Lake Ontario at the Bay of Quinte. Water from Glen and Basshaunt Lakes and 12 Mile Lake Inlet 1N, 12 Mile Lake Inlet 1S, Beech Lake Inlet 1, Moose Lake Inlet 1, Haliburton Lake Inlet 12, and Duck Lake Inlet 1 reaches the Bay of Quinte via the Gull River, the Kawartha Lakes system and the Trent River. Head Lake Inlet 1 drains via the Burnt River into the Kawartha Lakes system.

Drainage basin areas are summarized in Table 1. Detailed information on lake morphometry is given by Nicolls _et al_. (1983). A description of the bedrock and surficial geology underlying the basins is given by Jeffries and Snyder (1983) and pertinent aspects are summarized

in Table 2. Forest cover is almost continuous in the basins although most watersheds contain beaver ponds or bogs (Table 2). Lake level and stream flow were not controlled by man with the exception of Harp Lake, where lake level was controlled by a dam operated by a resident on the lake. Small logging operations, farms and dwellings (primarily recreational) around the lakes were the 3 main human activities which could impact on the hydrological cycle but disturbance was minimal. Consumptive use of lake, stream and ground water is minimal. The general hydrological and hydrometeorological characteristics of the area are summarized in Table 3, drawn from the Hydrological Atlas of Canada (1978).

III. METHODS

The methods employed in the collection and analysis of the hydrological data are summarized in Scheider *et al*. (1983).

IV. RESULTS

i) Precipitation

Daily precipitation depths for each lake and watershed were estimated from the closest Environment Canada meteorological station (Figure 1, Table 4). Daily depths for the six stations (and one additional station derived by combining the depths from two stations) are plotted in Figures 22-28. There were an average of 151 (range 108-178) days per year with precipitation in the 1976-1980 study period, or approximately one event every 2.4 days. The average depth of precipitation per event was 6.9 mm, with a maximum daily amount of 99.1 mm recorded on January 29, 1977. August was the wettest month in 14 of 28 station-years of data and November was the month of greatest precipitation in 7 of 28 station-years. February was the month having the least amount of precipitation in 20 of 28 station-years and May was driest in 7 of 28 station-years.

Annual precipitation depth, summarized for each station and year in Table 4, ranged from 0.791 m yr^{-1} to 1.35 m yr^{-1}. Mean annual precipitation depths ranged from 0.955 m yr^{-1} to 1.17 m yr^{-1} over the 4 year study period. In general, 1976-1977 and 1977-1978 were somewhat drier than normal whereas greater than normal amounts of precipitation fell in 1978-1979 and 1979-1980 compared to long-term average values for the area.

ii) <u>Runoff</u>

With respect to the water balance equation for a lake (1), runoff is defined as water draining the terrestrial portion of a lake's watershed or drainage from upstream lakes. Operationally it includes channelized streamflow measured at hydrological gauging stations (weir/flume). The type and period of use of each gauging station is summarized in Table 5. Stage-discharge relationships are plotted in Figures 29-99.

Values of mean daily discharge for the gauged watersheds are plotted in Figures 100-135. (This data may be obtained from the Limnology and Taxonomy Section on computer tape or disk). The minimum, maximum and mean values of mean daily discharge for each stream and each year are summarized in Table 6. Values of total annual discharge are summarized in Table 7.

Harp 3, Harp 6, Harp 6A, Harp Outlet, Jerry 4, Chub 2, Red Chalk 2, Blue Chalk 1, Paint 1, Trading Bay 1, Duck 1, Head 1, Dickie Outlet and all inlet streams to Dickie Lake were intermittent as defined by Ward (1967), in that they were dry for periods of every year during the 4 years of study. Jerry 3, Jerry Outlet, Red Chalk 3 and 4, 12 Mile 1S, Beech 1, Haliburton 12 and Moose 1 inlets were perennial (Ward 1967) in that their minimum mean daily discharge >0 during the 4 years of study. The remaining streams were intermittent in some years and perennial in others.

Discharge data can also be expressed in terms of a flow duration curve (Searcy 1959), which is simply a cumulative frequency curve

showing the percentage of time a given flow is equalled or exceeded. The curves show the flow characteristics of the streams throughout their range of flow without regard to sequence of streamflow events. Flow duration curves are presented (Figures 136-139) for a lake outlet (Red Chalk Outlet) and streams with relatively small and large water storage capacity in the surficial material of their watersheds (Dickie Inlet 5 and Beech Inlet 1 respectively) to show a range in the types of curves observed.

Since annual precipitation depth was similar over all watersheds, variability in total annual discharge is expected to be largely a function of drainage basin size. A linear regression of basin size vs total annual discharge in each of the 4 study years and using the average of the 4 years showed this to be the case. Basin area explained 98.5% - 99.3% of the variance in total annual discharge.

Expressing annual discharge as unit runoff (annual discharge m^3yr^{-1}/basin area m^2) factors out basin area and facilitates between basin comparisons in annual discharge. Values of annual unit runoff (m yr^{-1}) are summarized in Table 8. Annual mean values (ranges in brackets) for the 36 gauged watersheds were 0.343 m yr^{-1} (0.201-0.510 m yr^{-1}) in 1976-1977, 0.432 m yr^{-1} (0.196-0.588 m yr^{-1}) in 1977-1978, 0.543 m yr-1 (0.231-0.786 m yr^{-1}) in 1978-1979 and 0.555 m yr^{-1} (0.324-0.844 m yr-1) in 1979-1980. The 1976-1980 mean value was 0.475 m yr^{-1} (range 0.285-0.615 m yr^{-1}), comparing well with the long term mean value of 0.4-0.5 m yr^{-1} for the area (Hydrological Atlas of Canada 1978). Reasons for the observed range in runoff values are discussed by Scheider and deGrosbois (in prep).

Expressing unit runoff as yield (annual unit runoff m yr^{-1}/ annual precipitation depth m yr^{-1}) further standardizes the annual discharge data. Yield is the fraction of the annual precipitation which is lost from the basin as streamflow. Values of annual yield are summarized in Table 9. Mean values (ranges in brackets) were 0.397 (0.22-0.60) in 1976-1977, 0.488 (0.28-0.74) in

1977-1978, 0.446 (0.17-0.63) in 1978-1979 and 0.505 (0.28-0.74) in 1979-1980. The mean yield for the 1976-1980 period was 0.462 with mean values for the 36 individual watersheds ranging from 0.28-0.58.

Runoff is the residual of precipitation on the basin after the various hydrological demands of the basin are accounted for. These demands are primarily interception, storage in soil, snowpack, ponds etc. and evapotranspiration. The seasonal distribution of runoff is similar for each stream and is readily explained keeping this conception of runoff in mind. Peak runoff occurs in March and April in response to snowmelt. The saturated or sometimes frozen condition of the soil during this period and minimal losses due to interception and evapotranspiration ensure that most incoming precipitation and snowmelt are routed to runoff. Runoff declines to reach minimum values in June through September as vegetation comes into leaf, interception increases and losses to evapotranspiration increase. A secondary peak in runoff occurs from October through December in response to an increase in precipitation, reduced interception by leafless trees and decreased losses due to evapotranspiration. Runoff again typically declines from mid-December to reach minimum values in January and February as precipitation is stored in the snowpack and frozen soils. The percentage of annual flow that occurred in March, April and May ranged from 37% to 95% with mean values of 77%, 55%, 64% and 49% in 1976-1977, 1977-1978, 1978-1979 and 1979-1980 respectively. The percentage of annual flow occuring in October-December ranged from 2% to 48% with mean values of 12%, 34%, 21% and 35% in 1976-1977, 1977-1978, 1978-1979, and 1979-1980 respectively.

Streamflow has several contributing components including surface runoff, interflow, groundwater flow and channel precipitation. Or, more simply, streamflow is commonly thought of as a mixture of two components: baseflow and stormflow. Baseflow is defined as the part of streamflow that sustains flow during dry weather periods (Ward 1967). The fact that most of the study streams were classed as intermittent and had zero flow for a portion of the year

indicates that baseflow is not the major fraction of streamflow. A simple but reproducible method of estimating the baseflow component of streamflow is to equate monthly baseflow to the lowest observed value of streamflow in the month. A more subjective but widely used method is to join the low points on a hydrograph (plotted with a logarithmic y axis) with a smooth curve (Ward 1967). Baseflow has been estimated in the former manner for the study basins and is summarized in Table 10. The annual contribution of baseflow to total streamflow varied between 12% and 46% based on mean annual data over the 1976-1980 period.

iii) Energy Balance and Lake Evaporation

The principal terms of the energy balance of the lakes are: net radiation (ΔR); change in heat storage by the lake (ΔS_L); sensible heat loss by the lake (H); and evaporative heat loss by the lake (LE). The values of these terms for the study lakes are summarized in Tables 11 to 44 and plotted in Figures 140 - 166.

Peak values of net radiation (350-600 cal cm^{-2} day^{-1}) were observed in June and gradually declined for the remainder of the open water season. The lakes consistently gained heat in the spring and early summer, showed a fluctuating pattern of heat gain and loss during the summer and a consistent heat loss in the fall. The values of daily change in heat storage were commonly in the range of +200 to -200 cal cm^{-2} day^{-1}. Sensible heat loss by the lakes was in the range of 0-200 cal cm^{-2} day^{-1} with no obvious seasonal pattern. Daily rates of evaporative energy loss were generally maximum in the summer, declining to lower values in the fall although the variability observed was great. Most loss rates were in the range of 100-300 cal cm^{-2} day^{-1}, with net gain of energy by condensation not uncommon in the spring. The fraction of net radiation used to evaporate water ranged from 0.66 (Harp Lake 1979-1980) to 0.98 (Dickie Lake 1977-1978) with a mean value of 0.81. The remainder of the net radiation was lost to heating the air over the water by sensible heat exchange.

Annual values of lake evaporation are summarized in Table 45. Mean annual values and ranges were 0.76 m yr^{-1} (0.72-0.81 m yr^{-1}), 0.58 m yr^{-1} (0.56-0.63 m yr^{-1}), 0.68 m yr^{-1} (0.65-0.73 m yr^{-1}) and 0.65 m yr^{-1} (0.60-0.67 m yr^{-1}) in 1976-1977, 1977-1978, 1978-1979 and 1979-1980 respectively. The 4 year mean annual value was 0.66 m yr^{-1} in good agreement with the long-term estimate of 0.70 m yr^{-1} (Hydrological Atlas of Canada 1978).

Monthly rates of lake evaporation are plotted in Figures 167-173. Peak values (usually 0.10-0.15 m $month^{-1}$) were most commonly observed in July. Small net gains of water by condensation were estimated for Chub, Red Chalk and Blue Chalk Lakes in April 1979, and again for Blue Chalk Lake in April 1980.

iv) Groundwater

Groundwater is commonly defined as the water occurring in the zone of saturation below the earth's surface (Gray 1970). The paucity of surficial deposits in most of our study watersheds (Jeffries and Snyder 1983) and the impervious nature of the bedrock make it unlikely that groundwater is an important component of the lake water balance. The intermittent nature of most of the streams and relatively small proportion of the total streamflow made up of baseflow support this. However, an exception may be Red Chalk Lake where the ungauged sandy areas could provide significant direct input by groundwater to the lake (Lye and Scafe, unpub. manuscript).

v) Storage

No measurements were made of storage changes (in groundwater, soils, vegetation, depressions, snowpack, etc.) in the terrestrial watersheds. These undoubtedly occur over short time intervals but are assumed to be small on an annual basis and negligible over the study period of 4 years. Changes in lake level are plotted in Figures 174-179 and summarized on an annual basis in Table 46. For the 1976-1977 annual period no estimate could be made of change in

storage for Harp, Red Chalk and Dickie Lakes since lake level gauges were not in place until July 1976 or later. However, in all other lakes in all other years changes in annual lake level were generally small, ranging from -0.228 m to +0.156 m. Only Harp Lake levels were artificially controlled. Lake levels declined (2 of 3 lakes) in 1976-1977, rose in 1977-1978 (6 of 6 lakes) and 1978-1979 (5 of 6 lakes) and declined again in 1979-1980 (6 of 6 lakes). Over the 4 year study period, change in lake levels ranged from -0.063 m to +0.125 m in the 6 study lakes.

vi) Residence and Flushing Times

The residence time of a lake is the length of time required to displace a volume of water equivalent to the lake volume. The term is defined as either lake volume/total supply of water to the lake or lake volume/total loss of water from the lake. However, because a greater uncertainty exists in estimating the total supply than the total loss (because of the lack of information on ungauged runoff and groundwater), we calculate residence time as lake volume/total loss. Flushing time is calculated as lake volume/lake outflow and is longer than residence time because the water loss to evaporation is not included.

Residence and flushing times for the 6 study lakes are given in Table 47 and 48 respectively.

REFERENCES

Gray, D.M. (ed). 1970. Handbook on the principles of hydrology. Can. Nat. Comm. for Internat. Hydrol. Decade, Ottawa.

Hydrological Atlas of Canada. 1978. Fisheries and Environment Canada, EN 37-28/1978, Ottawa.

Jeffries, D.S. and W.R. Snyder. 1983. Geology and geochemistry of the Muskoka-Haliburton study area. Ont. Min. Envir. Data Report DR 83/2.

Nicolls, A., R. Reid, and B. Girard. 1983. Morphometry of the Muskoka-Haliburton study lakes. Ont. Min. Envir. Data Report DR 83/3.

Scheider, W.A., R.A. Reid, B. Locke and L.D. Scott. 1983. Studies of lakes and watersheds in Muskoka-Haliburton, Ontario: Methodology (1976-1982). Ont. Min. Envir. Data Report Dr 83/1.

Searcy, J.K. 1959. Flow-duration curves. In: Manual of Hydrology: Part 2. Low-flow techniques. Geological survey water-supply paper 1542-A. U.S. Dept. of Interior.

Ward, R.C. 1967. Principles of Hydrology. McGraw-Hill Ltd., London. 403 p.

Table 1: Watershed areas ($10^4 m^2$) of gauged and ungauged inlets, lake areas ($10^4 m^2$), total watershed areas ($10^4 m^2$) and % watershed gauged for 15 study lakes

Lake	Area gauged inlets ($10^4 m^2$)	Area ungauged inlets ($10^4 m^2$)	Lake area ($10^4 m^2$)	Total area ($10^4 m^2$)	% watershed gauged[1] ($10^4 m^2$)
Harp	429.2	79.4	66.9	575.5	86.2
Jerry	714.6	146.0	50.1	910.7	84.0
Chub	200.9	85.0	32.2	318.1	73.3
Dickie	311.9	136.7	93.2	541.8	74.8
Red Chalk	525.9	85.3	56.9	668.1	87.2
Blue Chalk	27.1	100.4	49.4	176.9	43.2
Buck	0	250.8	40.3	291.1	13.8
Solitaire	0	379.1	124.0	503.1	24.7
Little Clear	0	568.9	10.9	579.8	1.88
Walker	0	257.6	68.2	325.8	20.9
Crosson	0	501.2	56.8	558.0	10.2
Gullfeather	0	982.1	65.9	1048.0	6.3
Bigwind	0	396.4	111.0	507.4	21.9
Glen	0	97.2	16.3	113.5	14.4
Basshaunt	0	790.6	47.3	837.9	5.7

[1] includes gauged inlets and lake surface area

Table 2: Watershed area ($10^4 m^2$) and % watershed area formed by 3 surficial geology types and 4 land use categories for study watersheds

		Surficial Geology			Land Use			
Watershed	Area ($10^4 m^2$)	% Organic	% Shallow Surficial Deposits[1]	% Deep Surficial Deposits[2]	% Wooded	% Pasture	% Wetland	% Exposed Bedrock
Harp Inlet 3	22.6	9.3	11.2	79.5	69	0	11	20
3A	22.4	2.9	0.0	97.1	79	0	1	20
4	139.0	2.7	33.7	63.5	69	0	9	22
5	204.8	13.3	48.6	38.1	73	0	9	18
6	21.5	0.0	54.8	45.2	98	0	2	0
6A	18.9	8.5	84.9	6.6	89	0	11	0
Jerry Inlet 1	7.3	0.0	22.6	77.4	100	0	0	0
3	666.3	5.6	78.5	15.8	78	0	10	12
4	41.0	0.0	83.5	16.4	100	0	0	0
Chub Inlet 1	79.0	2.8	73.0	24.2	77	0	23	0
2	121.9	8.0	75.3	16.7	77	0	23	0
Dickie Inlet 5	34.4	25.4	74.6	0.0	78	0	22	0
6	25.4	22.0	78.0	0.0	79	0	21	0
8	71.4	8.2	78.1	13.7	93	0	7	0
10	71.6	17.1	82.8	0.0	81	0	19	0
11	109.1	20.9	79.1	0.0	82	0	18	0
Red Chalk Inlet 1	157.1	4.9	41.4	53.8	87	0	13	0
2	32.9	12.7	87.3	0.0	78	0	22	0
3	98.7	14.4	3.9	81.7	67	0	17	16
4	60.3	7.7	16.0	76.2	83	0	11	6
Blue Chalk Inlet 1	27.1	0.0	6.0	94.0	100	0	0	0
Buck Inlet 1	90.1	0.0		100	78	0	22	0
2	9.3	5.9	59.5	34.6	93	0	7	0
3	77.6	21.6	8.6	69.8	61	0	29	0
4	4.1	0.0	0.1	99.9	100	0	0	0
5	5.9	0.0	39.0	61.0	100	0	0	0
Solitaire Inlet 1	16.2	0.0	3.0	97.0	87	7	6	0
2	17.2	0.0	0.1	99.9	100	0	0	0
3	99.0	2.5	7.6	89.9	93	0	7	0
4	124.7	0.0	17.1	82.9	93	0	7	0

1. Surficial deposits < 1 m in depth
2. Surficial deposits > 1 m in depth

Table 2: cont'd

Watershed		Area ($10^4 m^2$)	Surficial Geology % Organic	% Shallow Surficial Deposits	% Deep Surficial Deposits	Land Use % Wooded	% Pasture	% Wetland	% Exposed Bedrock
Little	1	25.1	0.0	0.0	100	91	0	9	0
Clear	2	15.3	0.0	0.0	100	100	0	0	0
Inlet	3	3.1	0.0	0.0	100	100	0	0	0
Walker	1	33.1	2.6	2.6	94.8	81	7	12	0
Inlet	2	102.5	2.1	3.6	94.3	89	0	11	0
	3	5.9	0.0	0.0	100	100	0	0	0
	4	6.8	0.0	50.7	49.3	100	0	0	0
	5	15.7	0.0	5.5	94.5	100	0	0	0
	6	20.3	0.0	0.0	100	90	0	10	0
Crosson Inlet	1	432.3	15.8	67.1	17.1	84	0	16	0
Gullfeather	1	571.1	19.6	56.5	23.9	75	0	25	0
Inlet	2	306.6	11.9	60.5	27.6	81	0	17	0
Bigwind	1	20.7	18.4	32.1	49.5	74	0	26	0
Inlet	2	160.0	9.6	33.8	56.8	85	0	15	0
	3	75.5	0.0	0.0	100	92	0	8	0
Glen Inlet	1	20.9	0.0	0.0	100*	100	0	0	0
	2	32.4	0.0	0.0	100*	89	0	11	0
Basshaunt	1	28.5	5.5	80.1	14.4	96	0	4	0
Inlet	2	381.7	14.9	29.2	55.9	83	0	17	0
	3	20.1	6.3	6.6	87.2	91	0	9	0
	4	192.7	13.1	15.5	71.4	79	0	21	0
	5	29.9	11.3	0.0	88.7	89	0	11	0
	6	73.3	9.8	60.5	29.7	84	0	16	0
Paint Lake	1	21.3	4.7	43.6	51.7	97	0	3	0
Trading Bay	1	7.9	8.1	35.5	55.6	100	0	0	0
12 Mile 1N		426.7	5.5	0.0	94.5*	87	4	9	0
12 Mile 1S		171.8	12.3	0.0	87.7*	85	5	10	0

* includes carbonate till

Table 2: cont'd

Watershed		Area ($10^4 m^2$)	Surficial Geology % Organic	% Shallow Surficial Deposits	% Deep Surficial Deposits	Land Use % Wooded	% Pasture	% Wetland	% Exposed Bedrock
Beech	1	571.6	9.1	0.0	90.9*	74	15	11	0
Duck	1	47.3	0.0	0.0	100*	88	9	3	0
Head	1	48.3	22.0	64.2	13.8	69	0	31	0
Haliburton	12	65.6	0.0	0.0	100	100	0	0	0
Moose	1	437.9	2.8	0.0	97.2*	93	0	7	0

* includes carbonate till

Table 3: Summary of long-term means of hydrometeorological characteristics of study area. Data from Hydrological Atlas of Canada (1978).

Hydrometeorological Characteristics	Period of Record	Value in study area
mean annual precipitation depth	1941-1970	0.9-1.1 m yr^{-1}, gradient decreasing from west to east
mean annual snowfall	1941-1970	2.4-3.0 m yr^{-1}, gradient decreasing from west to east
date of formation of snow cover (as day of year when $\geq$ 2.5 cm of snow cover forms and remains > 7 days)	1955-1972	November 16 - December 6
date of loss of snow cover (as day of year when $\leq$ 2.5 cm of snow occurs and remains absent for $\geq$ 7 days)	1955-1972	April 10 - April 30
mean maximum depth of snow	1955-1972	0.5-0.7 m, occurring between January 30 - March 1
mean annual net radiation	1952-1970	40 Kcal $cm^{-2}yr^{-1}$
mean January daily temperature	1941-1970	-10°C (contour line runs through center of study area)
mean July daily temperature	1941-1970	17.5-20.0°C
mean annual lake evaporation	1957-1966	0.7 m yr^{-1} (contour line runs through center of study area)
date of formation of ice cover on lakes	10-19 yrs prior to 1973	December 1 - December 15
date of loss of ice cover on lakes	10-19 yrs prior to 1973	April 15 - May 1
mean annual runoff	1941-1970	0.4-0.5 m yr^{-1}
mean annual evapotranspiration	1941-1970	0.5-0.6 m yr^{-1}

Table 4: Annual (1976-1980) precipitation depth (m yr^{-1}) for each study watershed/lake and code (Figure 1) of meteorological station used to supply data

Station Code	Watershed/lake	Annual Precipitation depth (m yr^{-1})				
		1976-77	1977-78	1978-79	1979-80	mean
M1	Harp, Jerry, Walker	0.904	0.906	1.14	0.941	0.973
M2	Buck, Little Clear, Solitaire	0.952	1.23	1.20	1.15	1.13
M3	Red Chalk, Blue Chalk, Chub, Paint Lake 1, Trading Bay 1	0.823	0.818	1.35	1.18	1.04
M3/M4	Dickie	0.849	0.806	1.35	1.18	1.05
M4	Bigwind, Gullfeather, Crosson	1.26	0.791	1.07	1.18	1.08
M5	Basshaunt, Glen, Moose 1, Head 1, Haliburton 12	0.809	0.961	1.01	1.04	0.955
M6	12 Mile 1N, 12 Mile 1S, Duck 1, Beech 1	1.10	1.14	1.13	1.31	1.17

Table 5: Type and period of operation of hydrological gauging structures used on gauged watersheds

Watershed	Hydrological Gauging Structure	Period of Operation
Harp 3	90° V notch weir	June 1976 - June 1977
	90° V notch weir with upstream flume	June 1977 - June 1979
	90° V notch weir	June 1979 - June 1980
Harp 3A	90° V notch weir	June 1976 - June 1977
	90° V notch weir with H flume overflow	June 1977 - September 1979
	combination 90° V notch and rectangular weir	September 1979 - June 1980
Harp 4	90° V notch weir	June 1976 - January 1980
Harp 5	91 cm wide H flume	September 1976 - August 1979
	152 cm wide H flume with low flow structure	August 1979 - June 1980
Harp 6	90° V notch weir	September 1976 - June 1980
Harp 6A	90° V notch weir	June 1976 - August 1979
Harp Outlet	H flume	June 1976 - August 1979
	152 cm wide H flume with low flow structure	August 1979 - April 1980
Jerry 1	90° V notch weir	September 1976 - June 1980
Jerry 3	no structure	
Jerry 4	combination 90° V notch and rectangular weir	September 1976 - June 1980
Jerry Outlet	H flume	August 1976 - June 1980
Chub 1	90° V notch weir	June 1976 - June 1980
Chub 2	Cippoletti weir	June 1976 - September 1976
	Cippoletti weir with 120° V notch	September 1976 - March 1977
	Cippoletti weir	March 1977 - August 1977
	Cippoletti weir with low flow structure	August 1977 - June 1980
Chub Outlet	120° V notch weir	May 1976 - June 1980

Table 5: cont'd

Watershed	Hydrological Gauging Structure	Period of Operation
Dickie 5	90° V notch weir	August 1976 - May 1977
	combination 90° V notch and rectangular weir	May 1977 - June 1980
Dickie 6	90° V notch weir	August 1976 - June 1979
	90° V notch weir	June 1979 - June 1980
Dickie 8	H flume	August 1976 - June 1979
	H flume with 90° V notch weir as downstream control	June 1979 - June 1980
Dickie 10	90° V notch weir	August 1976 - June 1977
	combination 90° V notch and rectangular weir	June 1977 - June 1979
	combination 90° V notch and rectangular weir	June 1979 - June 1980
Dickie 11	120° V notch weir with downstream H flume	August 1976 - June 1979
	120° V notch weir	August 1979 - June 1980
Dickie Outlet	H flume	August 1976 - June 1977
	H flume and downstream low flow structure with 90° V notch	June 1977 - April 1979
	H flume and downstream low flow structure with 90° V notch	August 1979 - June 1980
Red Chalk 1	90° V notch weir	June 1976 - June 1980
Red Chalk 2	90° V notch weir	June 1976 - June 1980
Red Chalk 3	120° V notch weir	July 1976 - June 1978
	120° V notch weir	June 1978 - June 1980
Red Chalk 4	120° V notch weir	June 1976 - June 1980
Red Chalk Outlet	120° V notch weir	June 1976 - November 1976
	266 cm wide H flume	November 1976 - June 1977
	266 cm wide H flume with low flow structure	June 1977 - July 1979
	244 cm wide H flume with low flow structure	September 1979 - June 1980
Blue Chalk 1	combination 22½° and 90° V notch weir	June 1976 - June 1980
Blue Chalk Outlet	H flume	September 1976 - June 1980

Table 5: cont'd

Watershed	Hydrological Gauging Structure	Period of Operation
Haliburton 12	120° V notch weir	June 1977 - June 1980
Moose 1	244 cm wide H flume 122 cm wide H flume	September 1976 - June 1977 June 1977 - June 1980
12 Mile 1N	H flume	July 1976 - June 1980
12 Mile 1S	120° V notch weir	August 1976 - June 1980
Paint Lake 1	90° V notch weir	June 1976 - June 1980
Trading Bay 1	90° V notch weir	June 1976 - June 1980
Duck 1	90° V notch weir	July 1976 - June 1980
Head 1	90° V notch weir	September 1977 - June 1980
Beech 1	120° V notch weir	September 1976 - June 1980

Table 6: Minimum, maximum and mean values of mean daily discharge ($Lsec^{-1}$) for 36 gauged watersheds in each study year, 1976-1980

Watershed	Minimum discharge ($Lsec^{-1}$)				Maximum discharge ($Lsec^{-1}$)				Mean discharge ($Lsec^{-1}$)			
	1976-77	1977-78	1978-79	1979-80	1976-77	1977-78	1978-79	1979-80	1976-77	1977-78	1978-79	1979-80
Harp 3	0	0	0	0	56.8	43.7	83.9	74.7	3.34	3.60	4.58	4.55
3A	0	0.01	0.013	0	33.2	48.1	83.6	54.2	1.86	4.18	4.47	3.75
4	0.356	0.045	1.51	0	209.	207.	365.	459.	14.5	18.1	28.9	24.4
5	0.50	0	0.513	0	580.	323.	484.	823.	27.4	27.0	35.9	44.8
6	0	0	0	0	31.0	24.3	34.0	35.7	1.37	1.79	2.60	2.20
6A	0	0	0	0	45.5	25.7	45.0	41.6	1.65	2.00	2.63	2.74
outlet	0	0	0	0	998.	527.	835.	1340.	56.0	80.3	113.	108.
Jerry 1	0	0.003	0.011	0.027	9.57	10.3	13.2	18.4	.727	.967	1.22	1.17
3	7.0	4.0	0.048	0.528	1290.	666.	636.	1530.	84.4	87.0	120.	116.
4	0	0	0	0	53.0	44.5	67.3	79.0	3.85	4.46	6.37	6.62
outlet	5.58	6.01	17.3	4.68	1510.	1350.	1750.	1700.	114.	122.	175.	141.
Chub 1	0.011	0.003	0	0	122.	64.1	208.	102.	6.52	6.84	9.10	8.23
2	0	0	0	0	265.	156.	260.	384.	14.4	20.6	20.2	24.1
outlet	0	0.076	0	0.223	300.	333.	431.	540.	27.4	43.0	51.9	57.1
Dickie 5	0	0	0	0	106.	55.7	78.5	86.3	5.56	5.04	6.02	7.14
6	0	0	0	0	52.4	44.6	62.0	94.7	3.13	3.73	4.78	4.57
8	0	0	0	0	68.0	52.1	47.7	174.	5.91	7.28	6.90	12.7
10	0	0	0	0	150.	122.	172.	289.	11.2	11.3	14.5	15.7
11	0	0	0	0	197.	125.	184.	375.	10.3	13.4	17.4	17.3
outlet	0	0	0	0	741.	558.	541.	756.	60.3	69.8	85.1	92.0
Red Chalk 1	0	0.049	0.466	0.38	348.	214.	378.	402.	20.6	22.	27.6	28.
2	0	0	0	0	56.6	29.5	48.2	73.4	2.98	3.80	5.54	4.72
3	0.747	1.23	1.69	0.436	137.	106.	201.	185.	11.7	16.1	17.4	16.9
4	0.102	0.065	0.116	0.016	84.0	60.3	97.4	92.5	5.17	7.94	8.90	8.37
outlet	0.614	0	0.974	0	898.	520.	1020.	956.	78.8	93.1	128.	125.
Blue Chalk 1	0	0	0	0	37.8	22.9	30.8	42.6	2.71	1.69	1.99	3.40
outlet	0.50	0	0	0	222.	145.	271.	233.	20.4	22.6	30.5	32.5
Paint Lake 1	0	0	0	0	58.5	32.4	65.1	54.7	2.71	3.57	4.54	4.31
Trading Bay 1	0	0	0	0	15.6	18.2	51.7	60.6	0.64	1.44	1.97	2.11
12 Mile 1N	-	0	1.36	4.46	-	546.	867.	800.	-	67.5	77.0	83.8
12 Mile 1S	-	0.367	0.099	0.255	-	120.	348.	244.	-	23.6	30.8	28.7
Beech 1	1.45	0.508	2.54	0.842	759.	754.	1230.	1060.	64.0	81.7	104.	107.
Duck 1	-	0	0	0	-	53.5	92.1	53.3	-	7.81	7.90	7.80
Head 1	-	0	0	0	-	92.7	122.	123.	-	7.32	8.28	9.14
Haliburton 12	-	0.858	1.31	1.84	-	115.	127.	152.	-	9.63	13.1	11.6
Moose 1	4.40	1.17	1.22	1.50	333.	567.	789.	739.	48.3	69.5	83.9	86.0

Table 7: Total annual discharge ($10^4 m^3 yr^{-1}$) for the 36 gauged watersheds, 1976-1980

Watershed	Annual discharge ($10^4 m^3 yr^{-1}$)			
	1976-1977	1977-1978	1978-1979	1979-1980
Harp 3	10.5	11.4	14.4	14.4
3A	5.88	13.2	14.1	11.9
4	45.8	57.1	91.1	77.1
5	86.4	85.1	113.	142.
6	4.32	5.65	8.2	6.97
6A	5.2	6.31	8.3	8.66
outlet	177.	253	355	340
Jerry 1	2.29	3.05	3.85	3.7
3	266.	274.	380.	366.
4	12.2	14.1	20.1	20.9
outlet	359	384	552	446
Chub 1	20.6	21.6	28.7	26
2	45.3	64.9	63.8	76.3
outlet	86.3	136.	164.	180.
Dickie 5	17.5	15.9	19	22.6
6	9.87	11.8	15.1	14.5
8	18.7	23	21.8	40
10	35.3	35.8	45.7	49.5
11	32.5	42.4	54.8	54.8
outlet	190.	220.	269.	291.
Red Chalk 1	64.8	69.5	87.2	88.5
2	9.4	12.	17.5	14.9
3	36.8	50.7	55.	53.3
4	16.3	25.	28.1	26.5
outlet	249.	294.	404.	397.
Blue Chalk 1	8.56	5.32	6.26	10.8
outlet	64.4	71.3	96.2	103.
Paint 1	8.55	11.3	14.3	13.6
Trading Bay 1	2.02	4.55	6.21	6.67
12 Mile 1N	-	213.	243.	265.
12 Mile 1S	-	74.3	97.2	90.9
Beech 1	202.	258.	327.	338.
Duck 1	-	24.6	24.9	24.7
Head 1	-	23.1	26.1	28.9
Haliburton 12	-	30.4	41.2	36.7
Moose 1	152.	219.	265.	272.

Table 8: Annual unit runoff (m yr^{-1}) for 36 gauged watersheds, 1976-1980

Watershed	Annual unit runoff (m yr^{-1})				
	1976-77	1977-78	1978-79	1979-80	mean
Harp 3	0.467	0.503	0.639	0.636	0.561
3A	0.262	0.588	0.630	0.530	0.503
4	0.330	0.411	0.656	0.555	0.488
5	0.422	0.415	0.553	0.692	0.521
6	0.201	0.263	0.382	0.324	0.293
6A	0.275	0.334	0.439	0.458	0.377
outlet	0.307	0.440	0.617	0.591	0.489
Jerry 1	0.314	0.418	0.527	0.507	0.442
3	0.400	0.412	0.570	0.549	0.483
4	0.296	0.343	0.490	0.511	0.410
outlet	0.394	0.422	0.607	0.490	0.478
Chub 1	0.260	0.273	0.363	0.329	0.306
2	0.371	0.533	0.523	0.626	0.513
outlet	0.271	0.427	0.515	0.567	0.445
Dickie 5	0.510	0.462	0.552	0.657	0.545
6	0.388	0.464	0.594	0.569	0.504
8	0.261	0.322	0.305	0.561	0.362
10	0.492	0.500	0.638	0.691	0.580
11	0.298	0.388	0.502	0.502	0.423
outlet	0.351	0.407	0.496	0.537	0.448
Red Chalk 1	0.413	0.443	0.555	0.563	0.494
2	0.286	0.365	0.532	0.454	0.409
3	0.373	0.513	0.557	0.54	0.496
4	0.270	0.415	0.465	0.439	0.397
outlet	0.372	0.440	0.605	0.594	0.503
Blue Chalk 1	0.316	0.196	0.231	0.397	0.285
outlet	0.364	0.403	0.544	0.581	0.473
Paint 1	0.401	0.529	0.673	0.640	0.561
Trading Bay 1	0.255	0.575	0.786	0.844	0.615
12 Mile 1N	-	0.499	0.569	0.621	0.563
12 Mile 1S	-	0.432	0.566	0.529	0.509
Beech 1	0.353	0.451	0.573	0.592	0.492
Duck 1	-	0.521	0.527	0.522	0.523
Head 1	-	0.478	0.540	0.598	0.539
Haliburton 12	-	0.463	0.628	0.559	0.550
Moose 1	0.348	0.501	0.604	0.621	0.519
mean	0.343	0.432	0.543	0.555	0.475
n	31	36	36	36	36

Table 9: Annual yield for 36 gauged watersheds, 1976-1980

Watershed	Annual yield				
	1976-77	1977-78	1978-79	1979-80	mean
Harp 3	0.516	0.555	0.559	0.676	0.577
3A	0.290	0.649	0.551	0.563	0.513
4	0.365	0.454	0.574	0.590	0.496
5	0.466	0.458	0.484	0.735	0.536
6	0.222	0.290	0.334	0.344	0.298
6A	0.304	0.369	0.384	0.487	0.386
outlet	0.340	0.486	0.540	0.628	0.499
Jerry 1	0.347	0.461	0.461	0.539	0.452
3	0.442	0.454	0.499	0.584	0.495
4	0.328	0.379	0.428	0.543	0.420
outlet	0.436	0.465	0.531	0.521	0.488
Chub 1	0.316	0.334	0.269	0.278	0.299
2	0.451	0.651	0.388	0.529	0.505
outlet	0.329	0.521	0.381	0.479	0.428
Dickie 5	0.600	0.573	0.409	0.554	0.534
6	0.458	0.575	0.440	0.481	0.489
8	0.308	0.399	0.226	0.473	0.352
10	0.580	0.620	0.473	0.584	0.564
11	0.351	0.482	0.372	0.424	0.407
outlet	0.414	0.505	0.368	0.453	0.435
Red Chalk 1	0.501	0.541	0.411	0.476	0.482
2	0.347	0.446	0.394	0.383	0.393
3	0.453	0.627	0.413	0.456	0.487
4	0.328	0.507	0.345	0.371	0.388
outlet	0.452	0.537	0.449	0.502	0.485
Blue Chalk 1	0.383	0.240	0.171	0.335	0.282
outlet	0.442	0.492	0.403	0.491	0.457
Paint 1	0.487	0.646	0.499	0.540	0.543
Trading Bay 1	0.310	0.703	0.583	0.713	0.577
12 Mile 1N	-	0.436	0.502	0.474	0.471
12 Mile 1S	-	0.378	0.499	0.403	0.427
Beech 1	0.322	0.395	0.505	0.451	0.418
Duck 1	-	0.456	0.464	0.398	0.439
Head 1	-	0.498	0.537	0.577	0.537
Haliburton 12	-	0.482	0.625	0.539	0.549
Moose 1	0.430	0.521	0.601	0.599	0.538
mean	0.397	0.488	0.446	0.505	0.462
n	31	36	36	36	36

Table 10: Estimate of ratio of annual baseflow/total streamflow for 36 gauged watersheds, 1976-1980

Watershed	Annual baseflow/total flow				
	1976-77	1977-78	1978-79	1979-80	mean
Harp 3	0.276	0.315	0.285	0.247	0.281
3A	0.197	0.268	0.282	0.224	0.243
4	0.273	0.312	0.349	0.231	0.291
5	0.124	0.273	0.334	0.170	0.225
6	0.188	0.251	0.279	0.207	0.231
6A	0.117	0.192	0.299	0.289	0.224
outlet	0.357	0.355	0.380	0.403	0.374
Jerry 1	0.201	0.250	0.281	0.239	0.243
3	0.406	0.434	0.566	0.361	0.442
4	0.119	0.289	0.405	0.256	0.267
outlet	0.287	0.383	0.504	0.417	0.398
Chub 1	0.143	0.326	0.272	0.227	0.242
2	0.123	0.331	0.334	0.301	0.272
outlet	0.291	0.372	0.436	0.389	0.372
Dickie 5	0.194	0.231	0.303	0.179	0.227
6	0.179	0.223	0.317	0.244	0.241
8	0.210	0.283	0.263	0.180	0.234
10	0.246	0.208	0.328	0.195	0.244
11	0.236	0.238	0.308	0.217	0.250
outlet	0.367	0.391	0.532	0.388	0.420
Red Chalk 1	0.149	0.250	0.317	0.158	0.219
2	0.160	0.142	0.283	0.131	0.179
3	0.283	0.438	0.509	0.338	0.392
4	0.242	0.464	0.409	0.297	0.353
outlet	0.356	0.551	0.547	0.421	0.469
Blue Chalk 1	0.104	0.179	0.323	0.176	0.196
outlet	0.348	0.421	0.371	0.264	0.351
Paint 1	0.175	0.304	0.318	0.240	0.259
Trading Bay 1	0.107	0.078	0.184	0.127	0.124
12 Mile 1N	-	0.412	0.377	0.385	0.391
12 Mile 1S	-	0.428	0.326	0.421	0.392
Beech 1	0.399	0.365	0.410	0.367	0.385
Duck 1	-	0.476	0.423	0.466	0.455
Head 1	-	0.162	0.328	0.244	0.245
Haliburton 12	-	0.314	0.384	0.406	0.368
Moose 1	0.429	0.326	0.483	0.441	0.420

Table 11: Terms of the energy balance for Harp Lake, 1976

Period	ΔS_L[1] (cal cm^{-2})	ΔR[2] (cal cm^{-2})	B[3]	LE[4] (cal cm^{-2})	H[5] (cal cm^{-2})	E[6] (cm)
June 2 - 8	2032	3769	0.08	1615	122	2.74
June 9 - 22	685	6595	0.20	4941	969	8.38
June 23 - 28	229	2635	0.11	2175	231	3.69
June 29 - July 13	-285	5578	0.22	4796	1067	8.13
July 14 - 20	583	2249	0.21	1380	286	2.34
July 21 - 27	219	2860	0.26	2099	542	3.56
July 28 - Aug. 3	123	2146	0.24	1626	397	2.76
Aug. 4 - 10	-5	1891	0.28	1486	410	2.52
Aug. 11 - 17	22	1615	0.27	1250	343	2.12
Aug. 18 - 24	507	2335	0.17	1563	265	2.65
Aug. 25 - 31	-855	1794	0.32	2008	641	3.40
Sept. 1 - 7	-504	1884	0.35	1771	618	3.00
Sept. 8 - Oct. 12	-2281	7024	0.37	6790	2515	11.51
Oct. 13 - 26	-3721	1047	0.73	2755	2012	4.67
Oct. 27 - Nov. 10	-2822	399	0.87	1725	1496	2.92

1. ΔS_L = change in heat storage in lake (cal cm^{-2} period^{-1})

2. ΔR = net radiation (cal cm^{-2} period^{-1})

3. B = Bowen ratio (H/LE)

4. LE = evaporative heat loss from lake (cal cm^{-2} period^{-1})

5. H = sensible heat loss from lake (cal cm^{-2} period^{-1})

6. E = lake evaporation (cm period^{-1})

Table 12: Terms of the energy balance for Harp Lake, 1977

Period	ΔS_L (cal cm^{-2})	ΔR (cal cm^{-2})	B	LE (cal cm^{-2})	H (cal cm^{-2})	E (cm)
April 15 - 18	415	1255	-0.55	1884	-1045	3.19
April 19 - 26	1502	1599	-1.05	-2048	2145	-3.47
April 27 - May 10	1657	4633	0.36	2186	790	3.70
May 11 - 17	2315	2637	0.26	255	67	0.43
May 18 - 25	1525	2340	-0.04	851	-36	1.44
May 26 - 31	44	2111	0.23	1678	389	2.84
June 1 - 7	-947	1859	0.33	2114	692	3.58
June 8 - 14	- 206	2227	0.22	1990	443	3.37
June 15 - 21	1219	1696	0.18	404	73	0.68
June 22 - 28	1203	2269	0.10	967	99	1.64
June 29 - July 5	63	1961	0.21	1566	332	2.65
July 6 - 12	395	1571	0.23	958	217	1.62
July 13 - 19	1366	2385	0.12	914	106	1.55
July 20 - 26	-902	2077	0.17	2537	441	4.30
July 27 - Aug. 2	712	1540	0.15	719	110	1.22
Aug. 3 - 9	-340	1584	0.23	1562	362	2.65
Aug. 10 - 16	-1414	1329	0.26	2171	572	3.68
Aug. 17 - 23	-43	1060	0.34	821	282	1.39
Aug. 24 - 30	-1051	1666	0.08	2513	204	4.26
Aug. 31 - Sept. 6	1525	1252	0.12	-244	-29	-0.41
Sept. 7 - 13	-635	982	0.31	1238	379	2.10
Sept. 14 - 20	-502	545	0.41	741	306	1.26
Sept. 21 - 27	-587	342	0.49	625	304	1.06
Sept. 28 - Oct. 4	-915	625	0.38	1118	422	1.90
Oct. 5 - 11	-1212	460	0.67	1000	673	1.69
Oct. 12 - 18	-863	484	0.71	788	559	1.33
Oct. 19 - 25	-147	767	0.43	641	273	1.09
Oct. 26 - Nov. 1	-316	438	0.18	640	114	1.09
Nov. 2 - 8	172	98	-1.03	2648	-2722	4.49
Nov. 9 - 15	-1487	-7	0.82	813	667	1.38
Nov. 16 - 22	-1212	177	0.71	813	575	1.38
Nov. 23 - 24	-1334	-49	0.99	645	640	1.09

Table 13: Terms of the energy balance for Harp Lake, 1978

Period	ΔS_L(cal cm^{-2})	Δ R(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
May 6 - 9	1454	777	4.18	-131	-547	-0.22
May 10 - 16	1630	1140	5.23	-79	-412	-0.13
May 17 - 30	4038	5824	-0.11	2004	-218	3.40
May 31 - June 6	-1711	2482	0.23	3404	789	5.77
June 7 - 13	1004	1900	0.03	871	26	1.48
June 14 - 20	1304	2472	0.21	968	200	1.64
June 21 - 27	280	2190	0.22	1563	347	2.65
June 18 - July 4	807	3247	0.26	1939	500	3.29
July 5 - 11	334	2844	0.13	2216	294	3.76
July 12 - 18	218	2380	0.26	1714	448	2.90
July 19 - 25	373	1730	0.15	1179	178	2.00
July 26 - Aug. 1	-261	2324	0.23	2100	485	3.56
Aug. 2 - 8	366	2312	0.20	1615	331	2.74
Aug. 9 - 15	813	2220	0.16	1209	198	2.05
Aug. 16 - 22	182	1904	0.23	1402	320	2.38
Aug. 23 - 29	-1165	1397	0.24	2073	489	3.51
Aug. 30 - Sept. 13	-597	3887	0.32	3386	1098	5.74
Sept. 14 - 19	-959	1300	0.36	1664	596	2.82
Sept. 20 - 26	-541	1668	0.37	1615	593	2.74
Sept. 27 - Oct. 3	-737	1325	0.46	1414	647	2.40
Oct. 4 - 16	-1814	2386	0.50	2801	1399	4.75
Oct. 17 - 23	-598	917	0.54	981	534	1.66
Oct. 24 - Nov. 7	-580	1635	0.49	1487	728	2.52
Nov. 8 - 22	-2274	245	0.63	1499	1020	2.53

Table 14: Terms of the energy balance for Harp Lake, 1979

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 23 - 29	1654	1263	12.13	-30	-361	-0.05
April 30 - May 8	1769	2206	0.22	357	80	0.61
May 9 - 15	2182	2184	-0.47	4	-2	0.01
May 16 - 21	1080	2061	0.25	785	197	1.33
May 22 - 27	-308	1401	0.35	1262	447	2.14
May 28 - June 5	887	3245	0.16	2026	332	3.43
June 6 - 12	763	1952	0.14	1038	150	1.76
June 13 - 19	1187	2947	0.21	1457	303	2.47
June 20 - 26	-326	2336	0.33	1996	666	3.38
June 27 - July 2	88	1787	0.19	1422	277	2.41
July 3 - 9	893	2832	0.29	1505	434	2.55
July 10 - 17	944	2823	0.17	1608	271	2.72
July 18 - 24	328	2864	0.21	2098	438	3.56
July 25 - 31	-125	1872	0.20	1664	333	2.82
Aug. 1 - 7	-401	1760	0.20	1802	359	3.05
Aug. 8 - 14	-1041	1890	0.32	2223	708	3.77
Aug. 15 - 21	94	1766	0.30	1286	386	2.18
Aug. 22 - 28	72	1400	0.21	1098	230	1.86
Aug. 29 - Sept. 3	480	1175	0.16	597	98	1.01
Sept. 4 - 11	-906	1724	0.37	1922	708	3.26
Sept. 12 - 18	-345	1184	0.25	1226	303	2.08
Sept. 19 - 25	-390	1502	0.42	1337	555	2.27
Sept. 26 - Oct. 9	-1412	1345	0.35	2038	719	3.45
Oct. 10 - 16	-2265	479	0.67	1640	1103	2.78
Oct. 17 - 23	987	397	-0.13	-680	91	-1.15
Oct. 24 - 30	-1922	86	0.74	1151	856	1.95
Oct.31 - Nov. 6	-634	203	0.64	512	325	0.87
Nov. 7 - 20	-1841	41	0.93	976	907	1.65
Nov. 21 - Nov. 27	-71	-106	4.76	-6	-29	-0.01
Nov. 28 - Dec. 13	-1369	-227	1.14	534	607	0.91

Table 15: Terms of the energy balance for Harp Lake, 1980

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
May 7 - 13	751	1428	0.47	462	216	0.78
May 14 - 20	1165	1864	0.09	639	60	1.08
May 21 - 25	999	1963	-0.27	1314	-350	2.23
May 26 - 31	309	1744	0.20	1140	295	1.93

Table 16: Terms of the energy balance for Jerry Lake, 1976

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
July 14 - 20	216	2252	0.19	1712	324	2.90
July 21 - 27	295	2865	0.24	2064	506	3.50
July 28 - Aug. 3	-577	2150	0.25	2187	541	3.71
Aug. 4 - 10	458	1894	0.28	1120	316	1.90
Aug. 11 - 17	584	1618	0.28	808	226	1.37
Aug. 18 - 31	-1517	4134	0.23	4594	1057	7.79
Sept. 1 - 7	419	1888	0.35	1087	382	1.84
Sept. 8 - Oct. 12	-3361	7035	0.36	7639	2757	12.95
Oct. 13 - 26	-3227	1048	0.73	2474	1801	4.19
Oct. 27 - Nov. 10	-2821	399	0.87	1725	1495	2.92

Table 17: Terms of the energy balance for Jerry Lake, 1977

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 15 - 18	600	1255	-0.53	1390	-735	2.36
April 19 - 26	1534	1599	-1.13	-491	556	-0.83
April 27 - May 10	2212	4635	0.20	2018	405	3.42
May 11 - 17	1764	2640	0.14	770	106	1.31
May 18 - 25	1599	2342	0.01	736	6	1.25
May 26 - 31	-1297	2116	0.24	2758	655	4.68
June 1 - 7	201	1862	0.32	1262	399	2.14
June 8 - 14	230	2229	0.22	1639	360	2.78
June 15 - 21	1065	1699	0.19	532	102	0.90
June 22 - 28	952	2270	0.11	1187	132	2.01
June 29 - July 5	138	1963	0.22	1491	333	2.53
July 6 - 12	667	1573	0.24	730	175	1.24
July 13 - 19	1045	2386	0.12	1196	145	2.03
July 20 - 26	-581	2077	0.18	2254	403	3.82
July 27 - Aug. 2	-130	1201	0.17	1133	197	1.92
Aug. 3 - 16	-652	2917	0.24	2878	692	4.88
Aug. 17 - 23	-231	1062	0.35	958	336	1.62
Aug. 24 - 30	523	1670	0.11	1029	118	1.74
Aug. 31 - Sept. 6	-318	1256	0.14	1386	188	2.35
Sept. 7 - 13	-547	983	0.31	1167	363	1.98
Sept. 14 - 20	-474	547	0.42	721	300	1.22
Sept. 21 - 27	-636	343	0.49	658	321	1.12
Sept. 28 - Oct. 4	-1201	628	0.38	1327	502	2.25
Oct. 5 - 11	-888	464	0.67	810	543	1.37
Oct. 12 - 18	-1125	486	0.70	946	666	1.60
Oct. 19 - 25	-299	770	0.41	758	310	1.29
Oct. 26 - Nov. 1	-68	439	0.14	444	63	0.75
Nov. 2 - 8	274	100	-1.08	2157	-2331	3.66
Nov. 9 - 15	-1514	-5	0.82	829	681	1.40
Nov. 16 - 22	-1346	177	0.71	892	631	1.51
Nov. 23 - 24	-1497	-49	0.99	726	722	1.23

Table 18: Terms of the energy balance for Jerry Lake, 1978

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
May 6 - 9	1883	777	6.33	-151	-955	-0.26
May 10 - 16	2439	1143	-291.23	4	-1301	0.01
May 17 - 30	1746	5832	-0.08	4435	-349	7.52
May 31 - June 6	389	2485	0.30	1618	478	2.74
June 7 - 13	226	1903	0.19	1412	266	2.39
June 14 - 20	900	2474	0.20	1312	263	2.22
June 21 - 27	1382	2191	0.22	665	144	1.13
June 28 - July 4	-368	3249	0.25	2897	720	4.91
July 5 - 11	324	2845	0.11	2263	258	3.83
July 12 - 18	434	2383	0.26	1550	399	2.63
July 19 - 25	-260	1734	0.16	1714	280	2.90
July 26 - Aug. 1	128	2331	0.24	1784	419	3.02
Aug. 2 - 8	530	2316	0.20	1491	294	2.53
Aug. 9 - 15	432	2221	0.15	1560	229	2.64
Aug. 16 - 22	-149	1906	0.21	1693	362	2.87
Aug. 23 - 29	-512	1400	0.23	1555	357	2.63
Aug. 30 - Sept. 5	-3	2046	0.29	1593	457	2.70
Sept. 6 - 13	-1135	1854	0.37	2185	805	3.70
Sept. 14 - 19	-353	1300	0.34	1230	423	2.09
Sept. 20 - 26	-373	1668	0.36	1505	536	2.55
Sept. 27 - Oct. 3	-881	1325	0.45	1525	681	2.58
Oct. 4 - 17	-1776	2638	0.51	2915	1499	4.94
Oct. 18 - 24	-739	653	0.57	884	507	1.50
Oct. 25 - Nov. 7	-373	1648	0.42	1420	601	2.41
Nov. 8 - 22	-2352	265	0.67	1563	1054	2.65

Table 19: Terms of the energy balance for Jerry Lake, 1979

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
June 7 - 12	-257	1449	0.14	1497	209	2.54
June 13 - 19	2213	2759	0.19	460	86	0.78
June 20 - 26	-364	2336	0.32	2052	648	3.48
June 27 - July 2	-109	1787	0.15	1645	251	2.79
July 3 - 17	1520	5642	0.22	3372	751	5.71
July 18 - 24	-36	2864	0.21	2390	510	4.05
July 25 - 31	196	1872	0.20	1396	280	2.37
Aug. 1 - 7	-316	1760	0.21	1715	361	2.91
Aug. 8 - 14	-970	1890	0.32	2166	694	3.67
Aug. 15 - 21	226	1766	0.31	1180	360	2.00
Aug. 22 - 28	-106	1400	0.23	1228	278	2.08
Aug. 29 - Sept. 3	395	1175	0.18	662	118	1.12
Sept. 4 - 11	-1230	1724	0.37	2163	791	3.67
Sept. 12 - 18	33	1184	0.22	940	211	1.59
Sept. 19 - 25	-668	1502	0.41	1541	629	2.61
Sept. 26 - Oct. 16	-3105	1807	0.44	3405	1507	5.77
Oct. 17 - 23	339	397	-0.33	88	-29	0.15
Oct. 24 - Nov. 6	-2147	287	0.68	1448	986	2.45
Nov. 7 - 20	-2041	42	0.93	1082	1001	1.83
Nov. 21 - Dec. 13	-1508	-354	0.86	619	534	1.05

Table 20: Terms of the energy balance for Jerry Lake, 1980

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 21 - 29	1565	2139	-0.67	1760	-1186	2.98
April 30 - June 2	4537	9770	0.08	4858	375	8.23

Table 21: Terms of the energy balance for Red Chalk Lake (Main basin), 1976

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
June 3 - 9	3044	3594	0.07	515	34	0.87
June 10 - 16	-47	3614	0.15	3189	471	5.41
June 17 - 23	1639	3144	0.22	1237	267	2.10
June 24 - 30	-951	2444	0.19	2841	554	4.82
July 1 - 7	1364	3186	0.20	1522	300	2.58
July 8 - 14	-703	2405	0.31	2380	728	4.03
July 15 - 21	926	2300	0.19	1158	216	1.96
July 22 - 28	517	2850	0.24	1880	453	3.19
July 29 - Aug. 4	-82	2126	0.26	1746	462	2.96
Aug. 5 - 11	524	1846	0.28	1033	290	1.75
Aug. 12 - 18	124	1614	0.28	1164	327	1.97
Aug. 19 - 25	-738	2392	0.20	2605	525	4.42
Aug. 26 - Sept. 1	-283	1525	0.31	1385	424	2.35
Sept. 2 - 8	-731	2107	0.36	2085	753	3.53
Sept. 9 - 14	783	1291	0.36	374	134	0.63
Sept. 15 - Oct. 13	-4336	5560	0.40	7046	2850	11.94
Oct. 14 - Nov. 3	-4931	1188	0.76	3472	2647	5.88
Nov. 4 - 10	-3466	158	1.03	1785	1838	3.03

Table 22: Terms of the energy balance for Red Chalk Lake (Main basin), 1977

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 15 - 27	3237	2982	-2.26	202	-458	0.34
April 28 - May 11	2911	4954	0.15	1776	268	3.01
May 12 - 16	1424	1887	0.19	388	75	0.66
May 17 - 24	1377	2286	-0.20	1137	-229	1.93
May 25 - 30	-127	2035	0.22	1765	397	2.99
May 31 - June 6	858	2022	0.30	896	267	1.52
June 7 - 13	-259	2283	0.29	1968	574	3.34
June 14 - 20	160	1569	0.12	1255	154	2.13
June 21 - 27	1649	2296	0.16	556	92	0.94
June 28 - July 4	169	1919	0.22	1434	316	2.43
July 5 - 10	-198	1645	0.16	1588	255	2.69
July 11 - 18	1967	2390	0.09	387	36	0.66
July 19 - 25	-688	2112	0.14	2455	345	4.16
July 26 - Aug. 3	201	1981	0.18	1503	277	2.55
Aug. 4 - 8	1007	998	0.23	-7	-2	-0.01
Aug. 9 - 15	-1446	1702	0.11	2829	319	4.79
Aug. 16 - 22	-650	862	0.28	1178	334	2.00
Aug. 23 - 29	1533	1644	0.17	94	16	0.16
Aug. 30 - Sept. 7	-1074	1510	0.16	2220	364	3.76
Sept. 8 - 12	-467	923	0.30	1066	324	1.81
Sept. 13 - 19	-405	548	0.40	681	273	1.15
Sept. 20 - 26	-1057	312	0.51	909	460	1.54
Sept. 27 - Oct. 3	-1209	500	0.41	1215	494	2.06
Oct. 4 - 12	-1265	695	0.62	1209	751	2.05
Oct. 13 - 17	-896	432	0.74	765	563	1.30
Oct. 18 - 24	-429	677	0.54	720	386	1.22
Oct. 25 - 31	-242	534	0.20	646	130	1.10
Nov. 1 - 7	66	66	-0.75	-0	0	-0.00
Nov. 8 - 14	-1553	-6	0.76	880	667	1.49
Nov. 15 - 21	-1443	155	0.75	912	686	1.55
Nov. 22 - 24	-3151	-20	0.91	1636	1494	2.77

Table 23: Terms of the energy balance for Red Chalk Lake (Main basin), 1978

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
May 24 - 29	1514	2815	0.02	1270	31	2.15
May 30 - June 5	-622	2412	0.24	2452	582	4.16
June 6 - 12	769	2252	0.22	1218	264	2.07
June 13 - 19	401	2088	0.23	1373	314	2.33
June 20 - 26	899	2469	0.22	1291	279	2.19
June 27 - July 3	799	3110	0.22	1894	417	3.21
July 4 - 9	753	2467	0.10	1551	162	2.63
July 10 - 16	314	2283	0.29	1531	438	2.59
July 17 - 23	354	1784	0.13	1264	165	2.14
July 24 - 30	-304	2438	0.20	2294	448	3.89
July 31 - Aug. 7	838	2733	0.22	1547	348	2.62
Aug. 8 - 13	580	1957	0.19	1157	220	1.96
Aug. 14 - 20	-495	1692	0.12	1949	238	3.30
Aug. 21 - 27	-351	1796	0.25	1720	427	2.92
Aug. 28 - Sept. 3	-22	1840	0.26	1477	385	2.50
Sept. 4 - 10	-617	1688	0.34	1722	583	2.92
Sept. 11 - 17	-1086	1614	0.37	1972	728	3.34
Sept. 18 - 24	-194	1613	0.34	1344	463	2.28
Sept. 25 - Oct. 1	-1166	1393	0.47	1745	813	2.96
Oct. 2 - 9	-894	1099	0.56	1278	714	2.17
Oct. 10 - 15	-933	1311	0.40	1597	647	2.71
Oct. 16 - 22	-749	1164	0.58	1212	701	2.05
Oct. 23 - Nov. 5	-809	1718	0.54	1637	890	2.77
Nov. 6 - 21	-3049	308	0.62	2070	1287	3.51

Table 24: Terms of the energy balance for Red Chalk Lake (Main basin), 1979

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 22 - May 7	3783	3343	-0.18	-537	97	-0.91
May 8 - 16	3227	3074	-0.51	-313	160	-0.53
May 17 - 22	1313	2059	0.27	589	157	1.00
May 23 - 28	-535	1089	0.31	1240	384	2.10
May 29 - June 4	1828	2956	0.10	1027	101	1.74
June 5 - 11	460	1703	0.14	1091	152	1.85
June 12 - 18	928	2829	0.22	1560	340	2.64
June 19 - 25	-80	2366	0.31	1863	584	3.16
June 26 - July 3	452	2755	0.19	1928	376	3.27
July 4 - 10	1112	2495	0.27	1086	297	1.84
July 11 - 16	911	2254	0.10	1222	122	2.07
July 17 - 23	912	2964	0.23	1671	381	2.83
July 24 - 30	156	1926	0.20	1475	295	2.50
July 31 - Aug. 6	-438	2043	0.18	2098	383	3.56
Aug. 7 - 13	-691	1739	0.32	1838	592	3.12
Aug. 14 - 20	-475	1610	0.33	1566	520	2.65
Aug. 21 - 27	817	1581	0.21	632	132	1.07
Aug. 28 - Sept. 4	-926	1608	0.21	2093	440	3.55
Sept. 5 - 10	76	1130	0.37	770	284	1.30
Sept. 11 - 17	-223	1257	0.32	1124	356	1.91
Sept. 18 - 24	-809	1511	0.41	1649	670	2.80
Sept. 25 - Oct. 9	-2204	1541	0.37	2742	1003	4.65
Oct. 10 - 15	-1511	322	0.68	1092	741	1.85
Oct. 16 - 22	1008	572	0.34	-324	-111	-0.55
Oct. 23 - 29	-1678	6	0.68	1000	685	1.69
Oct. 30 - Nov. 5	-1580	263	0.57	1176	667	1.99
Nov. 6 - 19	-2247	67	0.94	1194	1119	2.02
Nov. 20 - Dec. 13	-3586	-391	0.85	1728	1467	2.93

Table 25: Terms of the energy balance for Red Chalk Lake (Main basin), 1980

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 30 - May 5	1755	1846	-0.29	128	-37	0.22
May 6 - 12	-337	1652	0.47	1357	632	2.30
May 13 - 19	974	1534	0.17	481	80	0.81
May 20 - 26	1735	2842	-0.14	1284	-177	2.18
May 27 - 31	132	1298	0.16	936	230	1.59

Table 26: Terms of the energy balance for Red Chalk Lake (East basin), 1977

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
May 31 - June 6	-616	2026	0.31	2019	623	3.42
June 7 - 13	534	2286	0.31	1336	417	2.26
June 14 - 20	32	1573	0.18	1309	232	2.22
June 21 - 27	1063	2299	0.19	1038	198	1.76
June 28 - July 4	-304	1923	0.23	1807	420	3.06
July 5 - 10	481	1645	0.22	951	213	1.61
July 11 - 18	1104	2390	0.16	1112	174	1.88
July 19 - 25	-429	2114	0.16	2189	355	3.71
July 26 - Aug. 3	-58	1982	0.20	1695	345	2.87
Aug. 4 - 8	491	1001	0.26	404	106	0.69
Aug. 9 - 15	-783	1704	0.27	1960	527	3.32
Aug. 16 - 22	-832	864	0.37	1240	456	2.10
Aug. 23 - 29	641	1648	0.19	842	164	1.43
Aug. 30 - Sept. 7	-490	1513	0.19	1682	321	2.85
Sept. 8 - 12	-112	923	0.31	788	247	1.34
Sept. 13 - 19	-479	551	0.40	735	295	1.25
Sept. 20 - 26	-735	315	0.51	696	354	1.18
Sept. 27 - Oct. 3	-841	504	0.41	956	389	1.62
Oct. 4 - 12	-1161	607	0.61	1095	673	1.86
Oct. 13 - 17	-580	399	0.73	566	413	0.96
Oct. 18 - 24	-147	678	0.51	545	279	0.92
Oct. 25 - 31	-113	534	0.13	572	75	0.97
Nov. 8 - 14	-1320	-2	0.75	754	564	1.28
Nov. 15 - 21	-843	155	0.72	580	418	0.98
Nov. 22 - 24	-494	-21	0.91	248	225	0.42

Table 27: Terms of the energy balance for Red Chalk Lake (East basin), 1978

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
May 6 - 23	3585	4486	-0.77	3852	-2950	6.53
May 24 - 29	623	2819	0.08	2039	158	3.46
May 30 - June 5	-840	2415	0.25	2601	654	4.41
June 6 - 12	592	2254	0.23	1352	311	2.29
June 13 - 19	268	2091	0.25	1457	365	2.47
June 20 - 26	583	2470	0.24	1526	361	2.59
June 27 - July 3	499	3111	0.23	2119	493	3.59
July 4 - 9	567	2467	0.12	1692	208	2.87
July 10 - 16	-77	2293	0.29	1841	529	3.12
July 17 - 23	602	1788	0.16	1026	161	1.74
July 24 - 30	-520	2440	0.21	2454	507	4.16
July 31 - Aug. 7	500	2736	0.23	1819	417	3.08
Aug. 8 - 13	489	1959	0.20	1225	245	2.08
Aug. 14 - 20	-314	1693	0.14	1758	250	2.98
Aug. 21 - 27	-341	1799	0.25	1713	427	2.90
Aug. 28 - Sept. 3	-186	1842	0.26	1608	420	2.73
Sept. 4 - 10	-520	1690	0.34	1651	559	2.80
Sept. 11 - 17	-715	1614	0.37	1702	627	2.89
Sept. 18 - Oct. 1	-856	3004	2.88	994	2866	1.69
Oct. 2 - 9	-949	1100	0.55	1319	730	2.24
Oct. 10 - 22	-867	2476	0.49	2250	1093	3.81
Oct. 23 - Nov. 5	-594	1719	0.54	1504	809	2.55
Nov. 6 - 21	-2035	311	0.60	1465	881	2.48

Table 28: Terms of the energy balance for Red Chalk Lake (East basin), 1979

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 22 - May 7	1613	3349	-0.00	1740	-5	2.95
May 8 - 16	2256	3074	-0.10	913	-95	1.55
May 17 - 22	-27	2059	0.30	1609	477	2.73
May 23 - 28	-291	1089	0.33	1038	342	1.76
May 29 - June 4	1318	2956	0.15	1430	208	2.42
June 5 - 11	247	1703	0.17	1246	210	2.11
June 12 - 18	-17	2829	0.24	2300	546	3.90
June 19 - 25	368	2366	0.29	1551	448	2.63
June 26 - July 3	535	2755	0.18	1877	344	3.18
July 4 - 10	764	2495	0.28	1350	381	2.29
July 11 - 16	711	2254	0.14	1356	188	2.30
July 17 - 23	452	2964	0.24	2034	478	3.45
July 24 - 30	-65	1926	0.21	1650	341	2.80
July 31 - Aug. 6	-333	2043	0.19	2001	376	3.39
Aug. 7 - 13	-643	1739	0.32	1801	581	3.05
Aug. 14 - 20	-150	1610	0.33	1322	438	2.24
Aug. 21 - 27	458	1581	0.22	922	202	1.56
Aug. 28 - Sept. 4	-28	1605	0.23	1328	305	2.25
Sept. 5 - 10	-810	1130	0.37	1418	521	2.40
Sept. 11 - 17	-220	1257	0.31	1128	349	1.91
Sept. 18 - 24	-590	1511	0.41	1494	607	2.53
Sept. 25 - Oct. 9	-1517	1541	0.35	2263	795	3.84
Oct. 10 - 15	-1101	322	0.67	849	573	1.44
Oct. 16 - 22	805	572	0.33	-174	-58	-0.30
Oct. 23 - 29	-1770	6	0.67	1062	715	1.80
Oct. 30 - Nov. 5	-421	263	0.53	446	238	0.76
Nov. 6 - 19	-1515	67	0.94	814	767	1.38

Table 29: Terms of the energy balance for Red Chalk Lake (East basin), 1980

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 21 - 30	1786	2244	-0.50	921	-463	1.56

Table 30: Terms of the energy balance for Blue Chalk Lake, 1976

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
June 3 - 9	2228	3594	-0.01	1375	-10	2.33
June 10 - 16	482	3614	0.12	2799	333	4.74
June 17 - 30	869	5587	0.16	4079	639	6.91
July 1 - 7	392	3187	0.19	2340	455	3.97
July 8 - 14	-356	2403	0.31	2104	656	3.57
July 15 - 21	369	2300	0.21	1599	332	2.71
July 22 - 28	377	2850	0.24	1992	481	3.38
July 29 - Aug. 4	100	2126	0.27	1601	425	2.71
Aug. 5 - 11	296	1847	0.28	1210	340	2.05
Aug. 12 - 18	-261	1614	0.28	1471	405	2.49
Aug. 19 - 25	889	2392	0.20	1253	250	2.12
Aug. 26 - Sept. 1	-1724	1526	0.31	2485	765	4.21
Sept. 2 - 8	46	2108	0.36	1514	547	2.57
Sept. 9 - 14	227	1291	0.36	782	282	1.32
Sept. 15 - Oct. 13	-4118	5554	0.41	6856	2816	11.62
Oct. 14 - Nov. 3	-4320	1186	0.76	3127	2379	5.30
Nov. 4 - 10	-1777	158	1.03	954	981	1.62

Table 31: Terms of the energy balance for Blue Chalk Lake, 1977

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 15 - May 11	4480	7926	-0.18	4227	-780	7.16
May 12 - 16	1461	1887	0.18	361	66	0.61
May 17 - 24	1530	2286	-0.20	945	-189	1.60
May 25 - 30	830	2035	0.23	984	221	1.67
May 31 - June 6	-754	2022	0.29	2146	630	3.64
June 7 - 13	712	2283	0.30	1212	359	2.05
June 14 - 20	350	1569	0.15	1060	158	1.80
June 21 - 27	1404	2296	0.18	756	136	1.28
June 28 - July 4	19	1919	0.23	1539	361	2.61
July 5 - 10	316	1645	0.23	1084	246	1.84
July 11 - 18	1358	2390	0.14	903	129	1.53
July 19 - 25	-751	2112	0.15	2498	365	4.23
July 26 - Aug. 3	82	1981	0.19	1601	297	2.71
Aug. 4 - 8	1140	998	0.25	-113	-29	-0.19
Aug. 9 - 15	-1241	1702	0.27	2319	624	3.93
Aug. 16 - 22	-1198	862	0.37	1504	556	2.55
Aug. 23 - 29	618	1644	0.20	855	171	1.45
Aug. 30 - Sept. 7	-144	1509	0.20	1374	280	2.33
Sept. 8 - 12	-560	923	0.32	1123	360	1.90
Sept. 13 - 19	-492	548	0.40	742	299	1.26
Sept. 20 - 26	-989	312	0.51	862	439	1.46
Sept. 27 - Oct. 3	-1028	500	0.43	1070	458	1.81
Oct. 4 - 12	-1549	695	0.62	1383	862	2.34
Oct. 13 - 17	-551	432	0.74	566	417	0.96
Oct. 18 - 24	-332	677	0.56	647	362	1.10
Oct. 25 - 31	-500	534	0.28	808	225	1.37
Nov. 1 - 7	27	66	-0.52	82	-43	0.14
Nov. 8 - 14	36	-6	0.76	-24	-18	-0.04
Nov. 15 - 21	-2554	155	0.77	1531	1178	2.60
Nov. 22 - 24	-1720	-20	0.92	887	813	1.50

Table 32: Terms of the energy balance for Blue Chalk Lake, 1978

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
May 24 - 29	1434	2815	0.05	1320	60	2.24
May 30 - June 5	-346	2412	0.24	2225	532	3.77
June 6 - 12	337	2252	0.22	1571	344	2.66
June 13 - 19	383	2088	0.22	1396	309	2.37
June 20 - 26	999	2469	0.21	1212	259	2.05
June 27 - July 3	680	3110	0.23	1979	451	3.35
July 4 - 9	1154	2467	0.12	1176	137	1.99
July 10 - 16	-157	2283	0.29	1898	542	3.22
July 17 - 23	378	1784	0.15	1220	186	2.07
July 24 - 30	96	2438	0.22	1920	422	3.25
July 31 - Aug. 7	233	2733	0.25	2002	498	3.39
Aug. 8 - 13	506	1957	0.21	1198	253	2.03
Aug. 14 - 20	-386	1692	0.15	1803	275	3.06
Aug. 21 - 27	-386	1796	0.26	1737	445	2.94
Aug. 28 - Sept. 3	59	1840	0.28	1396	385	2.37
Sept. 4 - 10	-695	1688	0.35	1768	614	3.00
Sept. 11 - 17	-1347	1614	0.38	2150	811	3.64
Sept. 18 - Oct. 1	-1189	3004	0.41	2968	1225	5.03
Oct. 2 - 9	-1259	1099	0.56	1510	847	2.56
Oct. 10 - 22	-1577	2475	0.51	2687	1365	4.55
Oct. 23 - Nov. 5	-837	1718	0.55	1645	910	2.79
Nov. 6 - 21	-2295	308	0.64	1585	1018	2.69

Table 33: Terms of the energy balance for Blue Chalk Lake, 1979

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 22 - May 7	4406	3343	-0.12	-1213	150	-2.06
May 8 - 16	1489	3074	-0.41	2688	-1103	4.56
May 17 - 22	627	2059	0.27	1130	301	1.92
May 23 - 28	459	1089	0.34	470	160	0.80
May 29 - June 4	1039	2956	0.14	1675	241	2.84
June 5 - 11	262	1703	0.10	1312	129	2.22
June 12 - 18	1117	2829	0.22	1400	312	2.37
June 19 - 25	-95	2366	0.32	1864	598	3.16
June 26 - July 3	1085	2755	0.20	1390	281	2.36
July 4 - 10	869	2495	0.28	1272	354	2.16
July 11 - 16	914	2254	0.13	1186	155	2.01
July 17 - 23	472	2964	0.23	2023	469	3.43
July 24 - 30	134	1926	0.21	1487	305	2.52
July 31 - Aug. 13	-1586	3763	0.26	4260	1089	7.22
Aug. 14 - 20	-91	1610	0.34	1274	428	2.16
Aug. 21 - 27	394	1581	0.23	964	223	1.63
Aug. 28 - Sept. 4	46	1605	0.24	1260	298	2.14
Sept. 5 - 10	-861	1130	0.38	1448	543	2.45
Sept. 11 - 17	-311	1257	0.33	1178	390	2.00
Sept. 18 - 24	-921	1511	0.41	1721	711	2.92
Sept. 25 - 30	-176	886	0.31	811	252	1.37
Oct. 1 - 15	-3621	978	0.53	3005	1593	5.09
Oct. 16 - 22	968	572	0.37	-288	-107	-0.49
Oct. 23 - 29	-2109	6	0.68	1257	858	2.13
Oct. 30 - Nov. 5	-794	263	0.58	667	389	1.13
Nov. 6 - 19	-1982	67	0.94	1058	991	1.79
Nov. 20 - Dec. 13	-1734	-391	0.85	726	617	1.23

Table 34: Terms of the energy balance for Blue Chalk Lake, 1980

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 21 - 29	2540	2071	-0.72	-1699	1230	-2.88
April 30 - May 6	1640	2175	-0.38	869	-334	1.47
May 7 - 12	-296	1324	0.49	1089	531	1.85
May 13 - 19	910	1536	0.15	546	80	0.93
May 20 - 26	1540	2843	-0.20	1628	-325	2.76
May 27 - June 3	578	2078	0.22	1233	268	2.09

Table 35: Terms of the energy balance for Chub Lake, 1976

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
June 1 - 10	2002	5220	0.04	3107	112	5.27
June 11 - 14	424	2350	0.21	1598	328	2.71
June 15 - 21	-71	2977	0.23	2468	580	4.18
June 22 - 27	635	2628	0.13	1771	222	3.00
June 28 - July 7	2612	3890	0.23	1041	237	1.76
July 8 - 12	-2802	1673	0.28	3501	974	5.93
July 13 - 19	235	2610	0.20	1979	396	3.35
July 20 - 26	-250	2443	0.25	2150	543	3.64
July 27 - Aug. 2	261	2179	0.22	1570	348	2.66
Aug. 3 - 9	-470	1908	0.26	1891	487	3.21
Aug. 10 - 16	-320	1622	0.21	1604	338	2.72
Aug. 17 - 23	1406	2364	0.15	830	128	1.41
Aug. 24 - 30	-3900	1878	0.26	4577	1201	7.76
Aug. 31 - Sept. 6	-360	1875	0.39	1605	630	2.72
Sept. 7 - 12	-77	1359	0.31	1095	341	1.86
Sept. 13 - Oct. 11	-2716	5870	0.38	6223	2363	10.55
Oct. 12 - Nov. 3	-3729	1412	0.71	3015	2126	5.11
Nov. 4 - 10	-826	158	1.03	485	499	0.82

Table 36: Terms of the energy balance for Chub Lake, 1977

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 15 - 21	1862	1811	-0.69	-164	114	-0.28
April 22 - 25	-303	718	0.02	1004	18	1.70
April 26 - May 8	1331	4263	0.20	2451	480	4.15
May 9 - 15	1392	2657	0.25	1009	256	1.71
May 16 - 23	1600	2377	-0.03	802	-26	1.36
May 24 - 29	-79	1952	0.19	1701	330	2.88
May 30 - June 5	295	2062	0.29	1371	397	2.32
June 6 - 12	-587	2394	0.32	2267	714	3.84
June 13 - 19	-603	1522	0.08	1959	166	3.32
June 20 - 26	1839	2139	0.18	254	46	0.43
June 27 - July 3	-44	1944	0.20	1656	332	2.81
July 4 - 11	44	2289	0.24	1817	429	3.08
July 12 - 17	1583	1822	0.16	205	34	0.35
July 18 - 24	-326	2072	0.14	2096	302	3.55
July 25 - Aug. 1	-326	1958	0.18	1940	344	3.29
Aug. 2 - 7	740	1235	0.25	397	99	0.67
Aug. 8 - 14	-803	1558	0.26	1879	482	3.18
Aug. 15 - 21	-1077	1050	0.35	1580	547	2.68
Aug. 22 - 28	1942	1619	0.25	-258	-65	-0.44
Aug. 29 - Sept. 5	-1048	1499	0.14	2239	307	3.80
Sept. 6 - 11	-706	941	0.31	1257	390	2.13
Sept. 12 - 18	-322	644	0.39	696	270	1.18
Sept. 19 - 25	-895	362	0.48	846	410	1.43
Sept. 26 - Oct. 2	-806	298	0.41	781	323	1.32
Oct. 3 - 10	-1007	773	0.57	1132	648	1.92
Oct. 11 - 16	-742	424	0.72	679	487	1.15
Oct. 17 - 23	-144	692	0.49	563	274	0.95
Oct. 24 - 30	-89	533	0.10	564	58	0.96
Oct. 31 - Nov. 6	156	162	-0.77	24	-19	0.04
Nov. 7 - 13	-1206	-36	0.51	773	397	1.31
Nov. 14 - 21	-952	190	0.80	636	506	1.08
Nov. 22 - 24	-719	-20	0.91	365	333	0.62

Table 37: Terms of the energy balance for Chub Lake, 1978

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
May 6 - 14	2907	1533	18.79	-69	-1304	-0.12
May 15 - 22	1623	2436	-0.69	2599	-1786	4.41
May 23 - 28	1520	2899	0.08	1276	103	2.16
May 29 - June 4	-768	2487	0.21	2696	559	4.57
June 5 - 18	558	4415	0.27	3042	815	5.16
June 19 - 25	245	2609	0.22	1932	432	3.27
June 26 - July 3	715	3254	0.24	2043	496	3.46
July 4 - 10	2287	2743	0.17	388	68	0.66
July 11 - 16	-2060	2006	0.29	3143	923	5.33
July 17 - 23	492	1784	0.17	1100	192	1.86
July 24 - 31	-378	2802	0.23	2584	595	4.38
Aug. 1 - 7	753	2369	0.22	1329	287	2.25
Aug. 8 - 13	416	1957	0.22	1267	273	2.15
Aug. 14 - 20	-121	1692	0.19	1525	288	2.58
Aug. 21 - 27	-841	1796	0.26	2097	539	3.55
Aug. 28 - Sept. 11	-663	3713	0.28	3410	966	5.78
Sept. 12 - 18	-897	1596	0.37	1814	679	3.07
Sept. 19 - 25	151	1688	0.29	1196	341	2.03
Sept. 26 - Oct. 2	-833	1523	0.45	1621	735	2.75
Oct. 3 - 10	-568	938	0.55	969	537	1.64
Oct. 11 - 16	-772	1473	0.45	1548	697	2.62
Oct. 17 - 23	-486	917	0.54	910	493	1.54
Oct. 24 - Nov. 6	-496	1578	0.47	1407	667	2.38
Nov. 7 - 21	-2784	315	0.60	1938	1162	3.28

Table 38: Terms of the energy balance for Chub Lake, 1979

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 23 - 29	751	1263	-1.18	-2879	3391	-4.88
April 30 - May 6	365	1413	0.53	687	362	1.16
May 7 - 13	3017	2344	-1.58	1154	-1827	1.96
May 14 - 21	75	2706	0.30	2028	603	3.44
May 22 - 27	-650	1401	0.33	1540	512	2.61
May 28 - June 3	1477	2632	0.20	961	194	1.63
June 4 - 10	318	2044	0.14	1518	208	2.57
June 11 - 17	512	2458	0.27	1535	411	2.60
June 18 - 24	-570	2389	0.29	2298	661	3.90
June 25 - July 2	478	2749	0.20	1899	372	3.22
July 3 - 8	824	2473	0.30	1267	382	2.15
July 9 - 15	548	2316	0.18	1502	265	2.55
July 16 - 22	196	3030	0.24	2282	552	3.87
July 23 - 29	-8	1955	0.18	1657	306	2.81
July 30 - Aug. 7	133	2380	0.20	1879	367	3.19
Aug. 8 - 12	-630	1523	0.31	1647	506	2.79
Aug. 13 - 19	-703	1480	0.36	1601	582	2.71
Aug. 20 - 26	651	1735	0.18	921	163	1.56
Aug. 27 - Sept. 4	-30	1839	0.22	1529	341	2.59
Sept. 5 - 9	-551	1118	0.35	1238	431	2.10
Sept. 10 - 16	-313	999	0.35	969	343	1.64
Sept. 17 - 23	-586	1533	0.38	1540	580	2.61
Sept. 24 - 30	-16	1126	0.30	877	265	1.49
Oct. 1 - 8	-1331	561	0.38	1367	525	2.32
Oct. 9 - 14	-1144	429	0.70	924	648	1.57
Oct. 15 - 21	621	452	0.46	-116	-53	-0.20
Oct. 22 - 28	-1501	128	0.51	1079	550	1.83
Oct. 29 - Nov. 4	-470	209	0.54	442	237	0.75
Nov. 5 - 19	-1617	110	0.93	895	832	1.52
Nov. 20 - Dec.13	-610	-391	0.84	119	100	0.20

Table 39: Terms of the energy balance for Chub Lake, 1980

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 21 - 30	1708	2244	-0.82	2989	-2453	5.07
May 1 - 14	1526	3868	0.09	2158	185	3.66
May 15 - 19	-136	1068	0.15	1047	157	1.78
May 20 - 27	1243	3218	0.07	1841	134	3.12
May 28 - 31	193	1074	0.13	698	183	1.18

Table 40: Terms of the energy balance for Dickie Lake, 1976

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
June 1 - 8	1750	4307	0.08	2366	190	4.01
June 9 - 15	763	3750	0.13	2636	351	4.47
June 16 - 21	-14	2497	0.25	2010	501	3.41
June 22 - 29	544	3274	0.14	2400	329	4.07
June 30 - July 7	-387	3244	0.23	2944	687	4.99
July 8 - 13	-804	2054	0.27	2243	615	3.80
July 14 - 19	1114	2226	0.17	948	164	1.61
July 20 - 26	244	2443	0.26	1741	458	2.95
July 27 - Aug. 2	-763	2181	0.21	2440	504	4.14
Aug. 3 - 9	313	1908	0.25	1275	320	2.16
Aug. 10 - 16	-79	1621	0.26	1351	349	2.29
Aug. 17 - 23	473	2364	0.15	1647	244	2.79
Aug. 24 - 30	-357	1878	0.22	1837	398	3.11
Aug. 31 - Sept. 7	-940	2178	0.35	2303	814	3.90
Sept. 8 - Oct. 10	-2857	6600	0.33	7129	2328	12.08
Oct. 11 - Nov. 10	-3334	1881	0.75	2982	2232	5.05

Table 41: Terms of the energy balance for Dickie Lake, 1977

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 15 - 25	2187	2528	-1.54	-626	967	-1.06
April 26 - May 8	896	4263	0.18	2863	503	4.85
May 9 - 15	1305	2657	0.24	1093	259	1.85
May 16 - 23	2026	2377	-0.02	359	-8	0.61
May 24 - 29	-658	1952	0.20	2183	428	3.70
May 30 - June 5	-242	2062	0.28	1806	499	3.06
June 6 - 12	382	2394	0.33	1516	496	2.57
June 13 - 19	-10	1522	0.14	1347	186	2.28
June 20 - 26	852	2139	0.17	1098	189	1.86
June 27 - July 11	-47	4235	0.21	3545	737	6.01
July 12 - 17	1526	1822	0.14	259	37	0.44
July 18 - 24	-428	2071	0.13	2213	286	3.75
July 25 - Aug. 1	-216	1958	0.16	1869	305	3.17
Aug. 2 - 7	-754	1235	0.25	1597	392	2.71
Aug. 8 - 14	689	1558	0.25	694	175	1.18
Aug. 15 - 21	-1113	1050	0.34	1611	553	2.73
Aug. 22 - 28	946	1619	0.25	540	133	0.92
Aug. 29 - Sept. 5	197	1499	0.14	1137	165	1.93
Sept. 6 - 11	-991	941	0.32	1463	468	2.48
Sept. 12 - 18	-536	644	0.39	848	333	1.44
Sept. 19 - Oct. 2	-1763	660	0.45	1667	756	2.82
Oct. 3 - 10	-921	773	0.57	1076	618	1.82
Oct. 11 - 16	-925	424	0.72	784	565	1.33
Oct. 17 - 23	-162	692	0.51	564	290	0.96
Oct. 24 - 30	-10	533	0.20	454	89	0.77
Oct. 31 - Nov. 6	280	164	-0.55	-256	140	-0.43
Nov. 7 - 13	-1205	-32	0.55	759	414	1.29
Nov. 14 - 24	-1205	169	0.82	755	619	1.28

Table 42: Terms of the energy balance for Dickie Lake, 1978

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
May 6 - 22	4752	3967	-1.11	7350	-8135	12.46
May 23 - 28	1278	2899	0.12	1444	177	2.45
May 29 - June 4	-620	2487	0.22	2547	560	4.32
June 5 - 18	1512	4415	0.26	2300	603	3.90
June 19 - 25	174	2609	0.22	1993	442	3.38
June 26 - July 4	118	3657	0.25	2837	702	4.81
July 5 - 10	355	2343	0.13	1755	233	2.97
July 11 - 17	-514	2526	0.28	2378	662	4.03
July 18 - 24	736	1642	0.11	819	88	1.39
July 25 - 31	-513	2424	0.22	2416	521	4.10
Aug. 1 - 8	506	2658	0.20	1801	352	3.05
Aug. 9 - 14	-1163	1991	0.19	2642	512	4.48
Aug. 15 - 22	1161	2133	0.21	804	167	1.36
Aug. 23 - 28	-671	1148	0.23	1474	345	2.50
Aug. 29 - Sept. 4	-442	2011	0.27	1925	528	3.26
Sept. 5 - 11	-539	1586	0.33	1600	525	2.71
Sept. 12 - 18	-750	1596	0.37	1717	629	2.91
Sept. 19 - 25	-143	1688	0.26	1451	380	2.46
Sept. 26 - Oct. 2	-450	1523	0.45	1360	613	2.30
Oct. 3 - 10	-1077	938	0.55	1301	714	2.20
Oct. 11 - 16	-698	1473	0.44	1511	660	2.56
Oct. 17 - 23	-423	917	0.54	871	469	1.48
Oct. 24 - Nov. 6	-473	1549	0.47	1374	649	2.33
Nov. 7 - 21	-2116	315	0.60	1520	911	2.58

Table 43: Terms of the energy balance for Dickie Lake, 1979

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 22 - May 6	2081	2970	-0.32	1316	-426	2.23
May 7 - 13	2720	2344	-1.50	757	-1133	1.28
May 14 - 24	-34	3851	0.28	3038	847	5.15
May 25 - 29	152	652	0.39	359	141	0.61
May 30 - June 3	1193	2230	0.20	864	173	1.46
June 4 - 10	48	2044	0.13	1768	228	3.00
June 11 - 17	256	2458	0.26	1752	450	2.97
June 18 - 24	-187	2389	0.29	1995	581	3.38
June 25 - July 5	419	3957	0.22	2904	635	4.92
July 6 - 8	833	1267	0.26	344	90	0.58
July 9 - 15	921	2360	0.17	1226	212	2.08
July 16 - 22	13	3030	0.25	2422	595	4.10
July 23 - 29	-243	1955	0.20	1838	360	3.11
July 30 - Aug. 6	0	2401	0.18	2033	368	3.45
Aug. 7 - 12	-708	1511	0.30	1701	518	2.88
Aug. 13 - 19	-1014	1480	0.37	1826	668	3.10
Aug. 20 - 26	597	1705	0.21	919	189	1.56
Aug. 27 - Sept. 3	98	1523	0.22	1168	257	1.98
Sept. 4 - 9	-110	1431	0.34	1148	393	1.95
Sept. 10 - 16	-588	999	0.36	1168	418	1.98
Sept. 17 - 23	-762	1533	0.36	1690	606	2.86
Sept. 24 - 30	562	1126	0.28	440	124	0.75
Oct. 1 - 8	-1718	561	0.40	1631	649	2.76
Oct. 9 - 14	-1317	429	0.71	1024	722	1.74
Oct. 15 - 28	-945	577	0.40	1088	435	1.84
Oct. 29 - Nov. 18	-2202	332	0.80	1409	1126	2.39
Nov. 19 - Dec. 13	-65	-403	0.80	-188	-150	-0.32

Table 44: Terms of the energy balance for Dickle Lake, 1980

Period	ΔS_L(cal cm^{-2})	ΔR(cal cm^{-2})	B	LE(cal cm^{-2})	H(cal cm^{-2})	E(cm)
April 22 - May 4	2397	3176	0.06	736	43	1.25
May 5 - 13	386	2179	0.41	1269	524	2.15
May 14 - 20	981	1864	0.21	731	152	1.24
May 21 - 27	52	2785	0.03	2641	92	4.48
May 28 - 31	206	1074	0.12	707	161	1.20

Table 45: Annual lake evaporation (m yr^{-1}) for 7 study lakes, 1976-1980

Lake	Annual lake evaporation (m yr^{-1})				
	1976-77	1977-78	1978-79	1979-80	mean
Harp	0.730	0.559	0.676	0.634	0.650
Jerry	0.770	0.570	0.694	0.655	0.672
Chub	0.808	0.547	0.670	0.666	0.673
Dickie	0.768	0.623	0.731	0.649	0.693
Red Chalk (main)	0.728	0.566	0.645	0.663	0.651
Red Chalk (east)	0.718	0.578	0.683	0.657	0.639
Blue Chalk	0.759	0.584	0.682	0.601	0.657
Mean	0.761	0.575	0.683	0.646	0.662

Table 46: Change in lake level (m yr^{-1}) for 6 study lakes, 1976-1980

Lake	Change in lake level (m yr^{-1})				
	1976-77	1977-78	1978-79	1979-80	1976-80
Harp	-	+0.147	+0.024	-0.102	+0.069
Jerry	+0.093	+0.058	-0.030	-0.142	-0.021
Chub	-0.047	+0.075	+0.059	-0.093	-0.006
Dickie	-	+0.113	+0.020	-0.155	-0.022
Red Chalk	-	+0.114	+0.032	-0.021	+0.125
Blue Chalk	-0.228	+0.156	+0.043	-0.034	-0.063

Table 47: Residence time (years) for 6 study lakes, 1976-1980

Lake	Residence Time (years)				
	1976-77	1977-78	1978-79	1979-80	1976-80
Harp	3.66	2.84	2.06	2.16	2.54
Jerry	1.56	1.50	1.05	1.29	1.32
Chub	2.54	1.86	1.54	1.41	1.75
Dickie	1.77	1.67	1.38	1.32	1.51
Red Chalk	2.78	2.48	1.83	1.86	2.17
Blue Chalk	4.13	4.21	3.24	3.17	3.63

Table 48: Flushing time (years) for 6 study lakes, 1976-1980

Lake	Flushing Time (years)				
	1976-77	1977-78	1978-79	1979-80	1976-80
Harp	4.67	3.26	2.33	2.43	2.94
Jerry	1.72	1.61	1.12	1.39	1.42
Chub	3.30	2.10	1.74	1.58	2.01
Dickie	2.44	2.11	1.72	1.59	1.91
Red Chalk	3.25	2.75	2.00	2.04	2.41
Blue Chalk	6.54	5.90	4.38	4.09	5.03

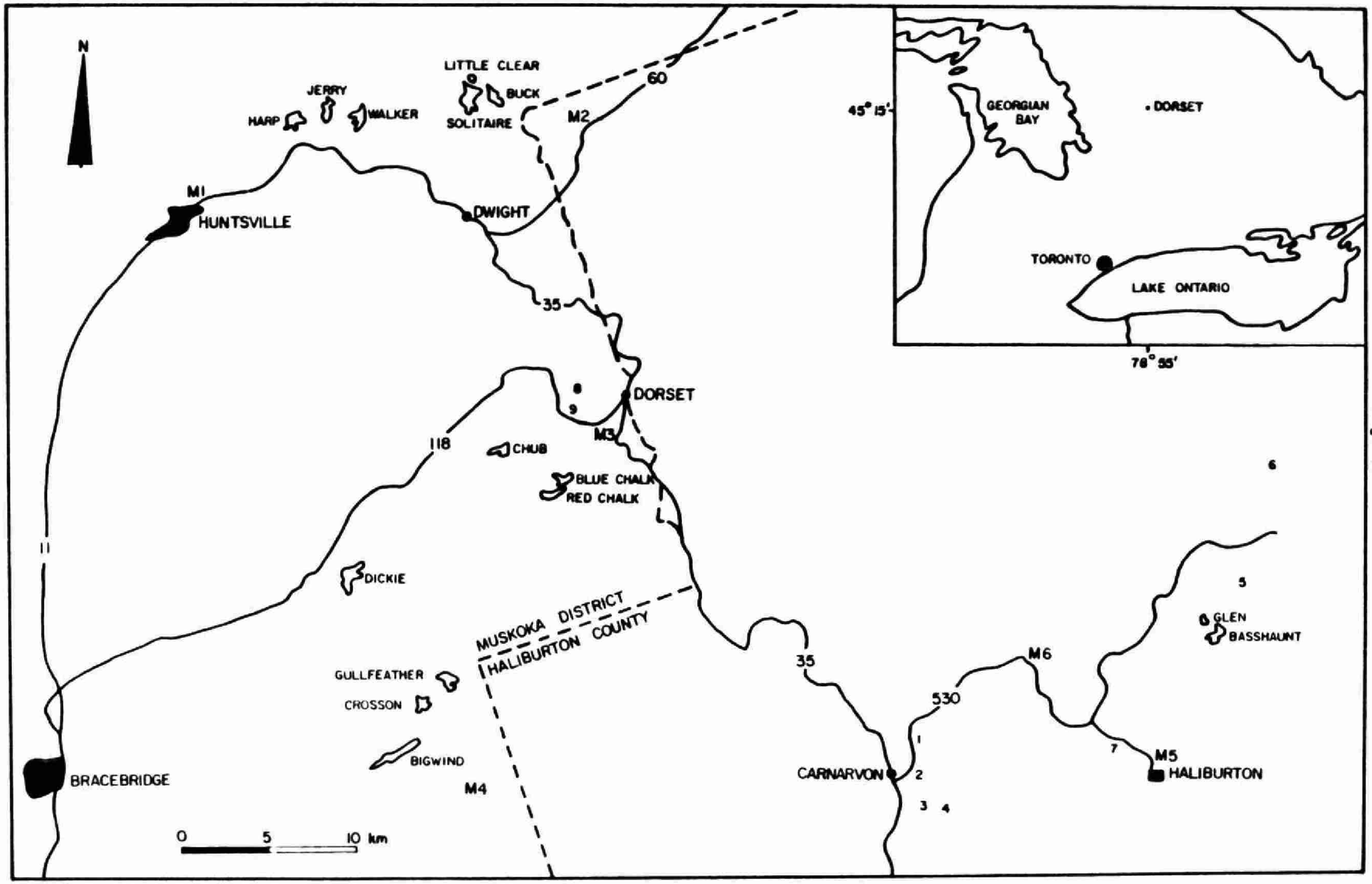

N
LITTLE CLEAR
JERRY
BUCK
HARP
WALKER
SOLITAIRE
60
M2
M1
HUNTSVILLE
DWIGHT
35
DORSET
M3
118
CHUB
BLUE CHALK
RED CHALK
11
DICKIE
MUSKOKA DISTRICT
HALIBURTON COUNTY
GULLFEATHER
CROSSON
BIGWIND
M4
BRACEBRIDGE
0
5
10 km
35
530
M6
CARNARVON
M5
HALIBURTON
GLEN
BASSHAUNT
45° 15'
GEORGIAN BAY
DORSET
TORONTO
LAKE ONTARIO
78° 55'

Figure 1

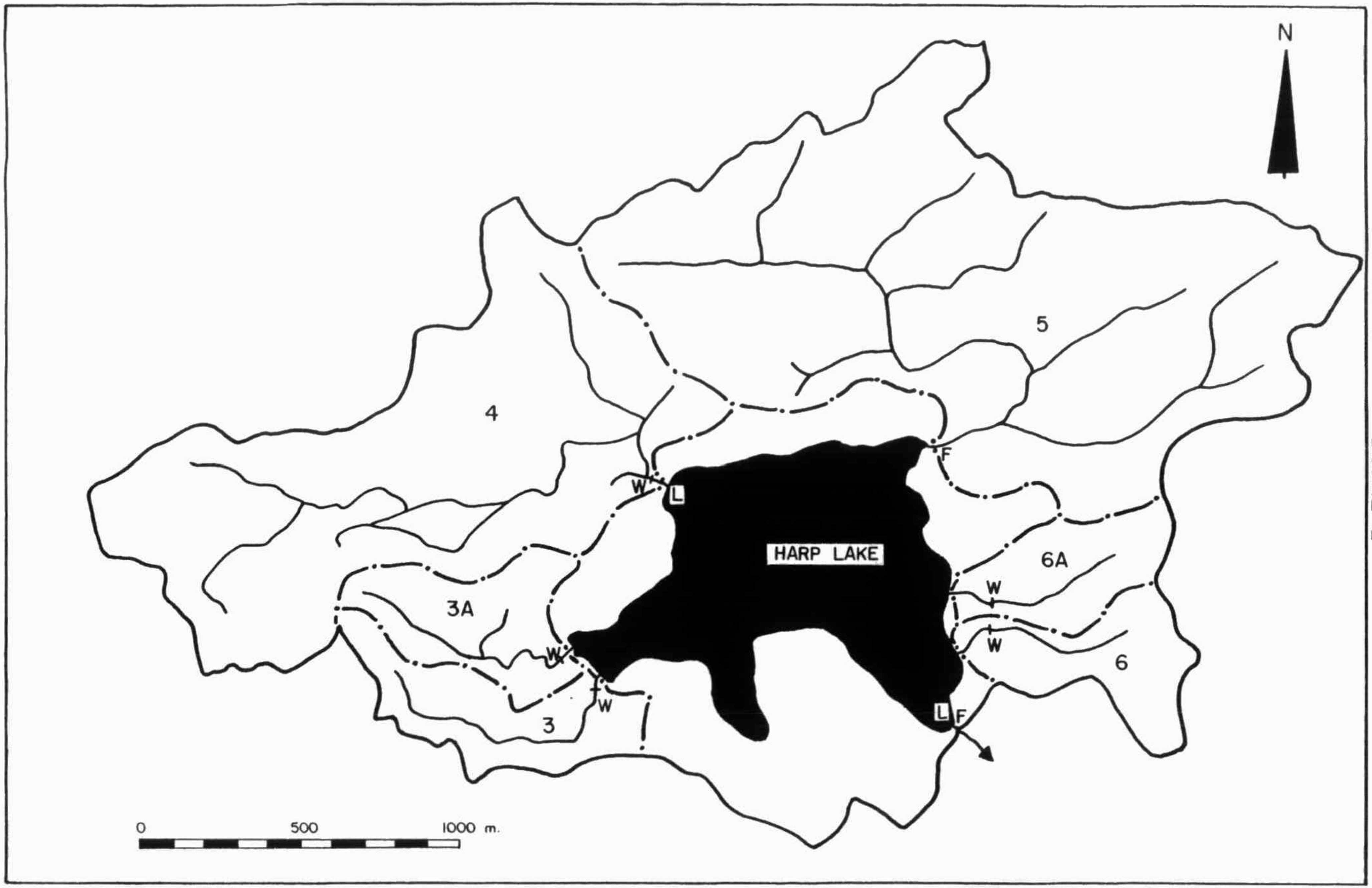


FIGURE 2

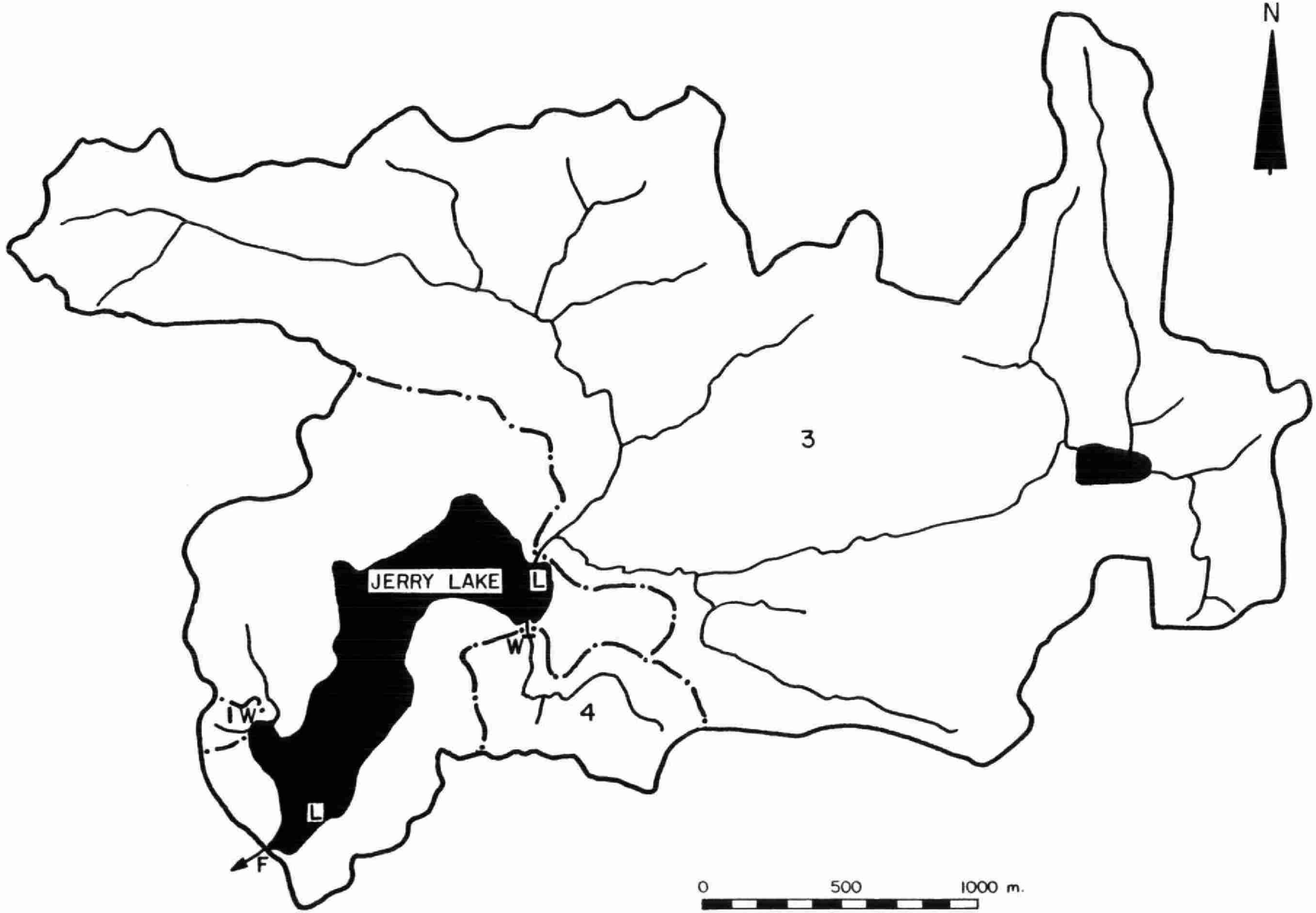


FIGURE 3

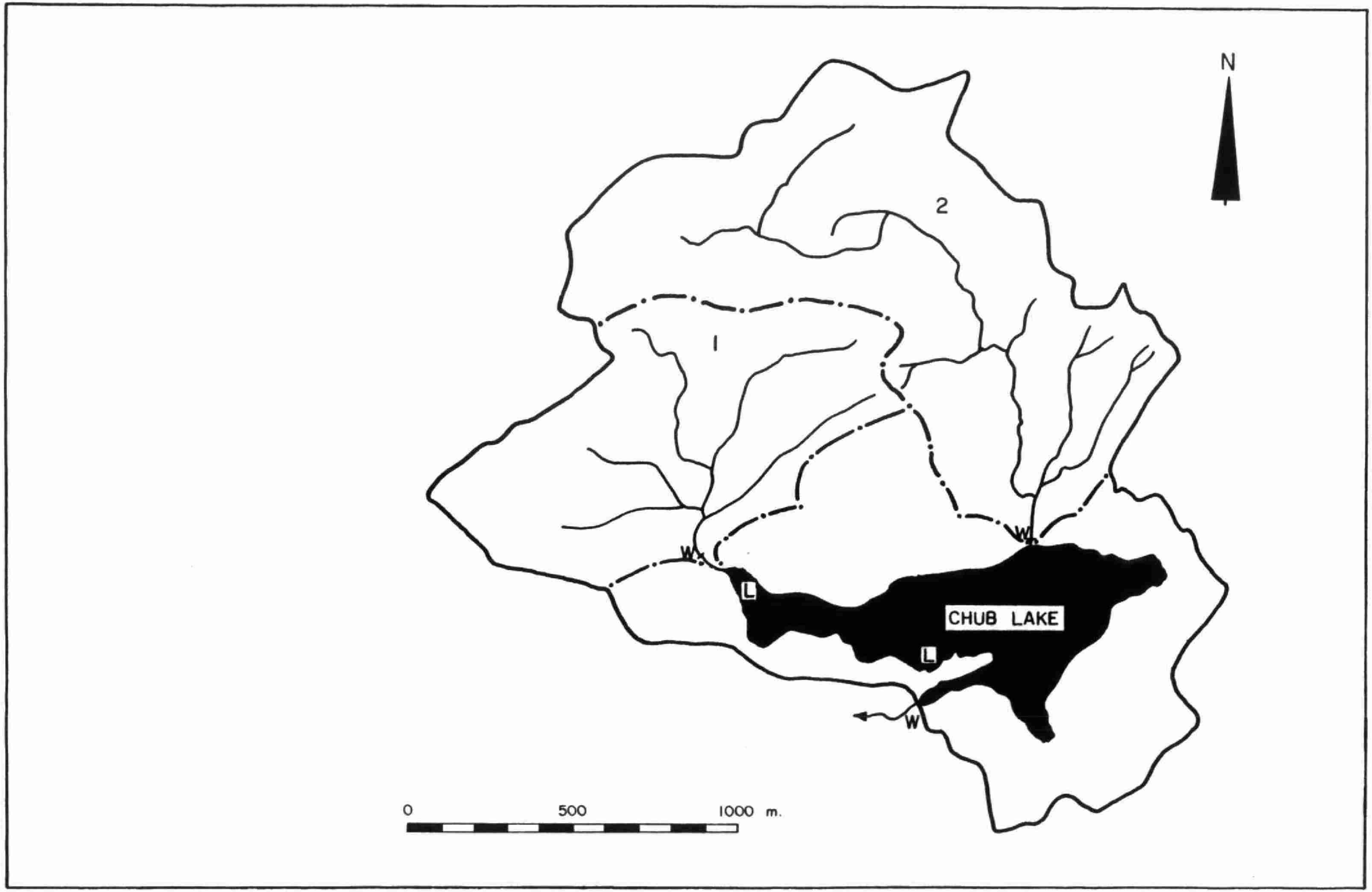


FIGURE 4

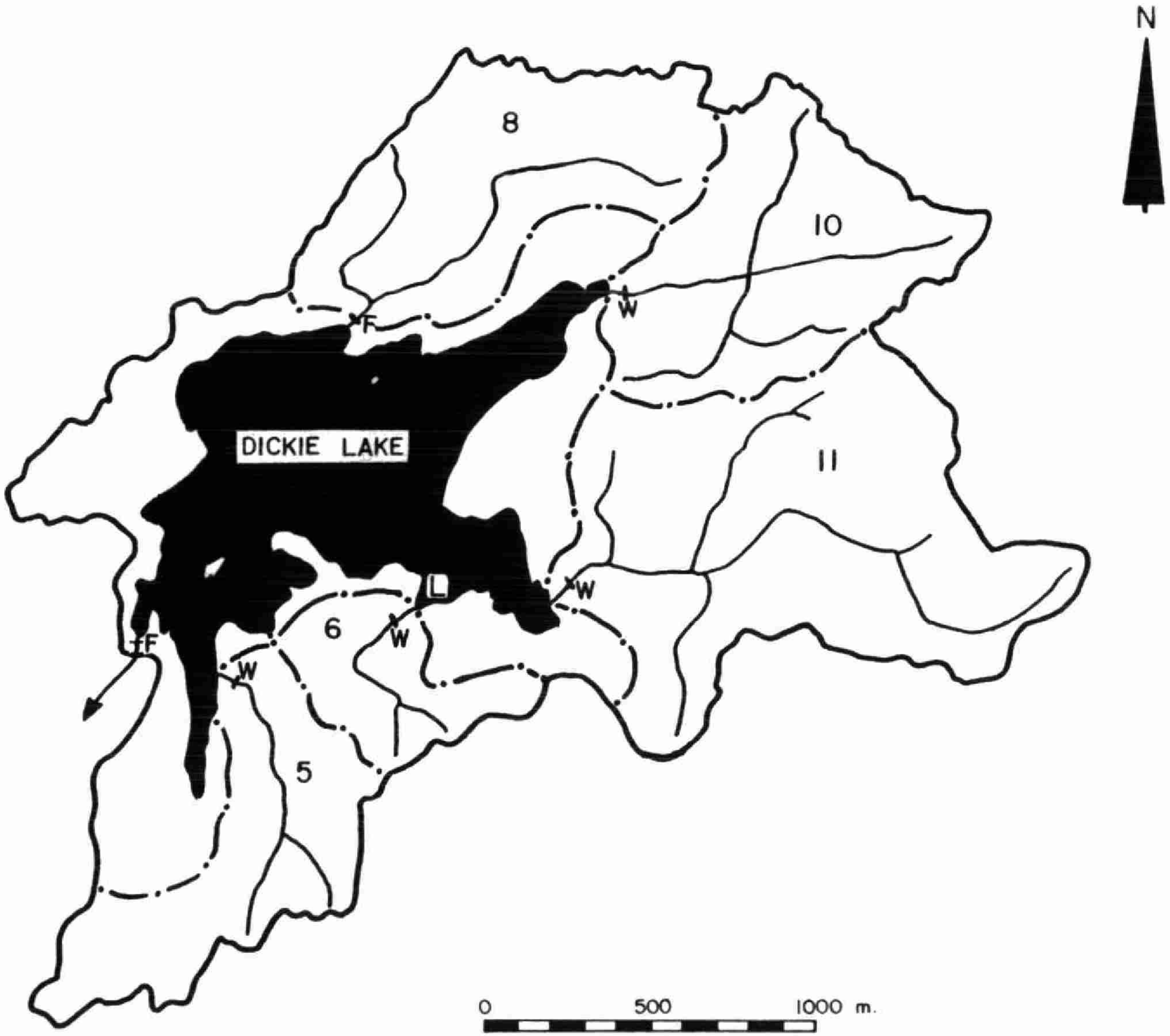


FIGURE 5

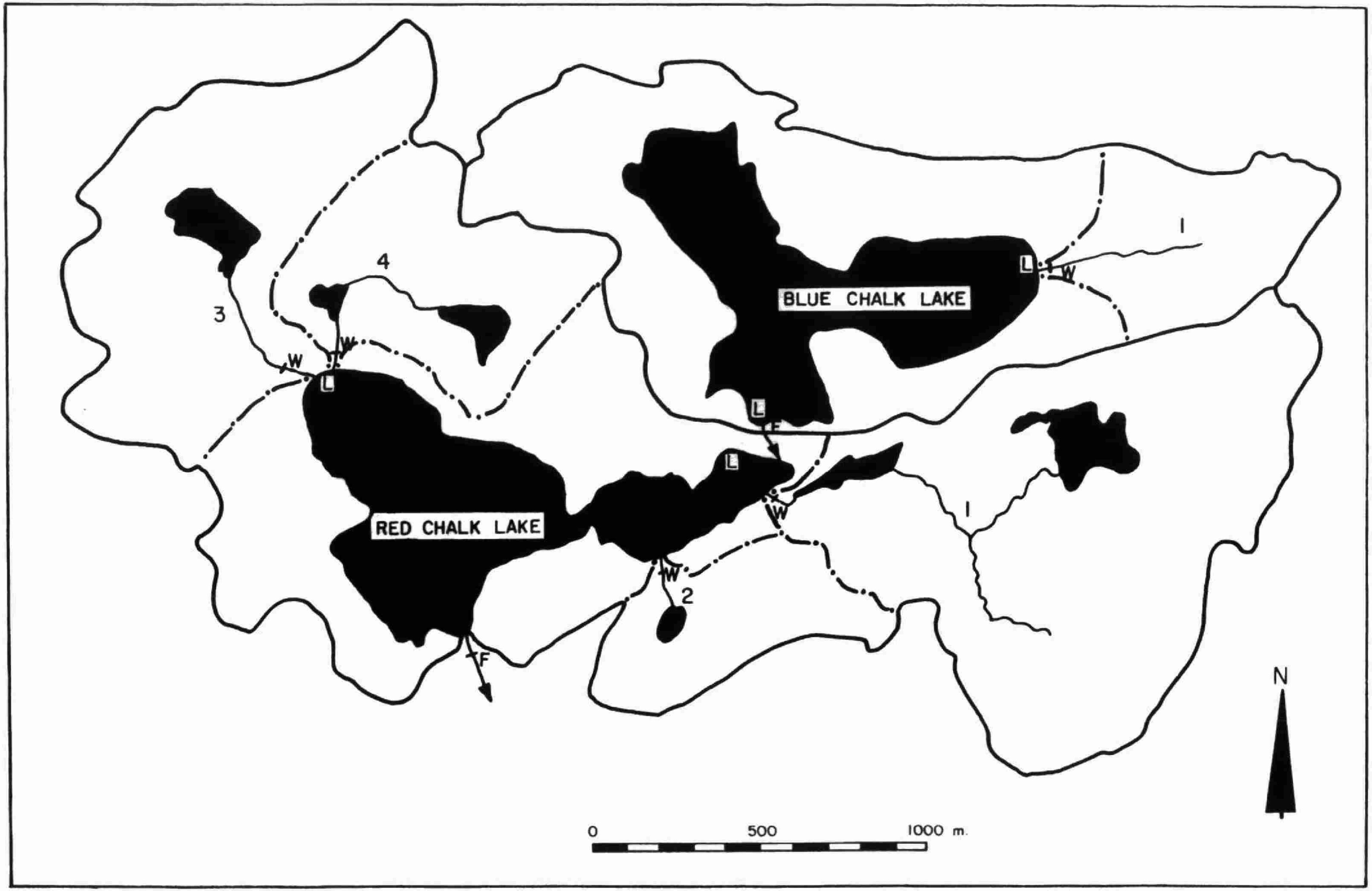
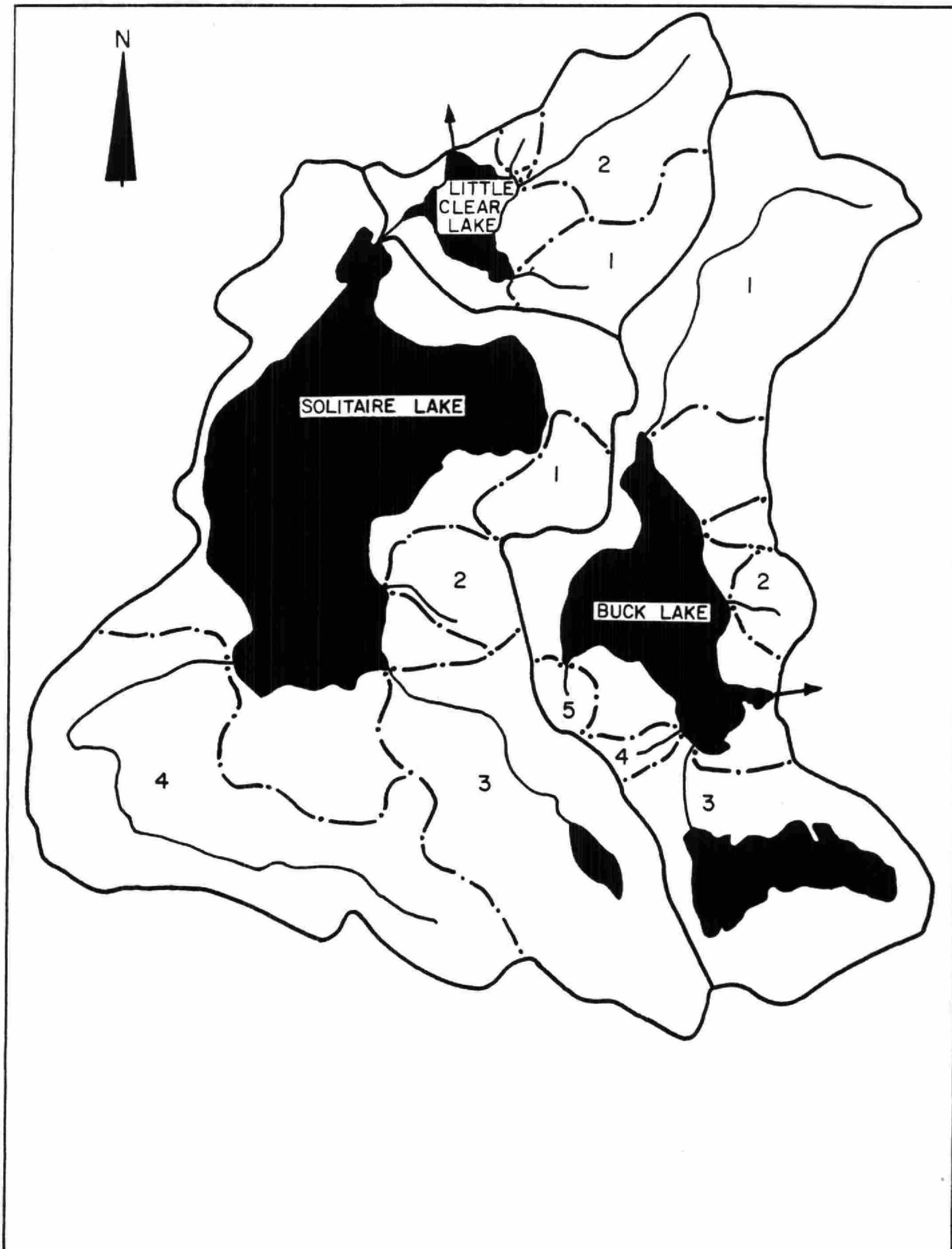


FIGURE 6

FIGURE 7


N
LITTLE CLEAR LAKE
SOLITAIRE LAKE
BUCK LAKE
1
1
1
2
2
2
3
3
4
4
5
0
500
1000 m.

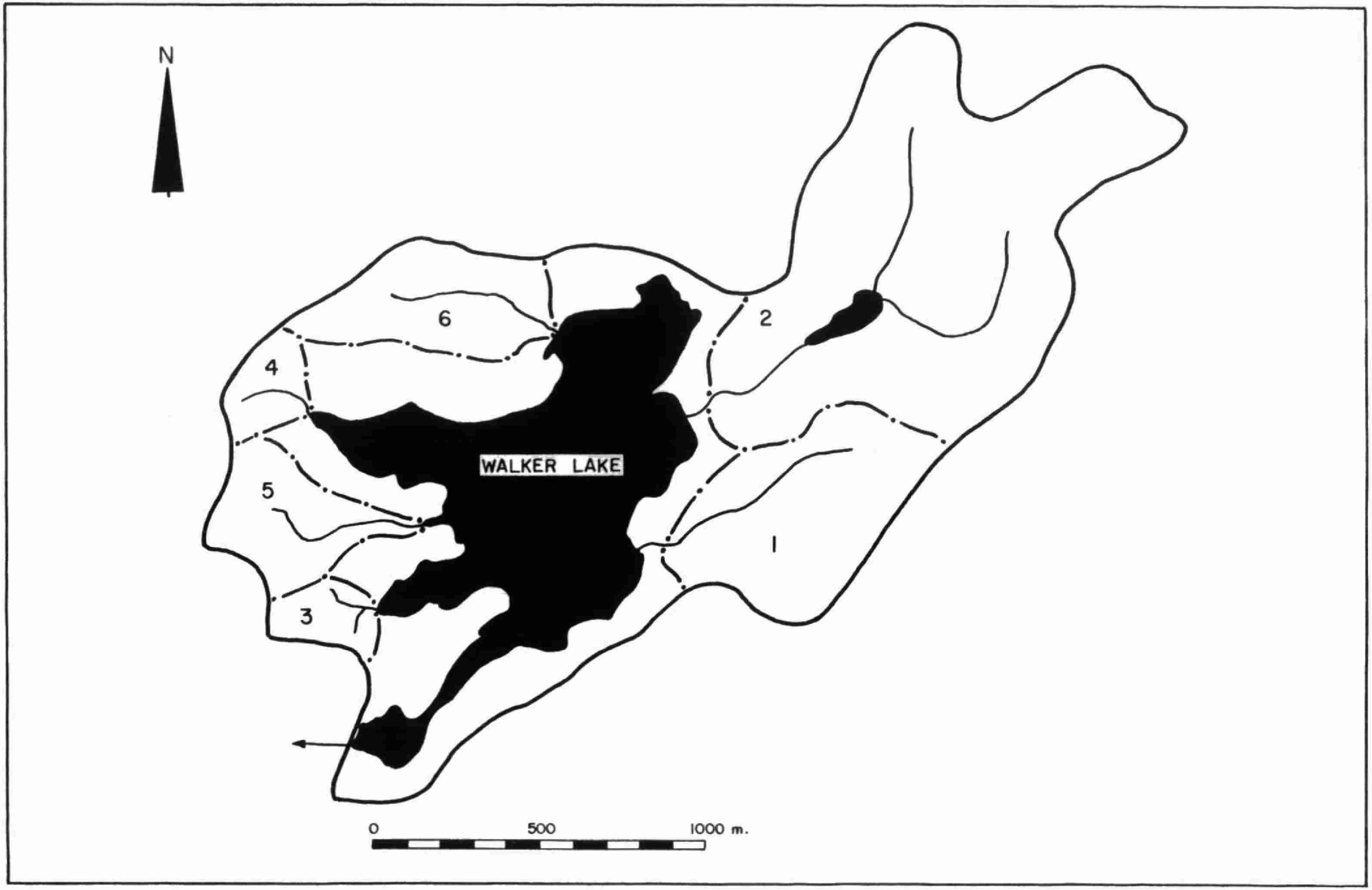
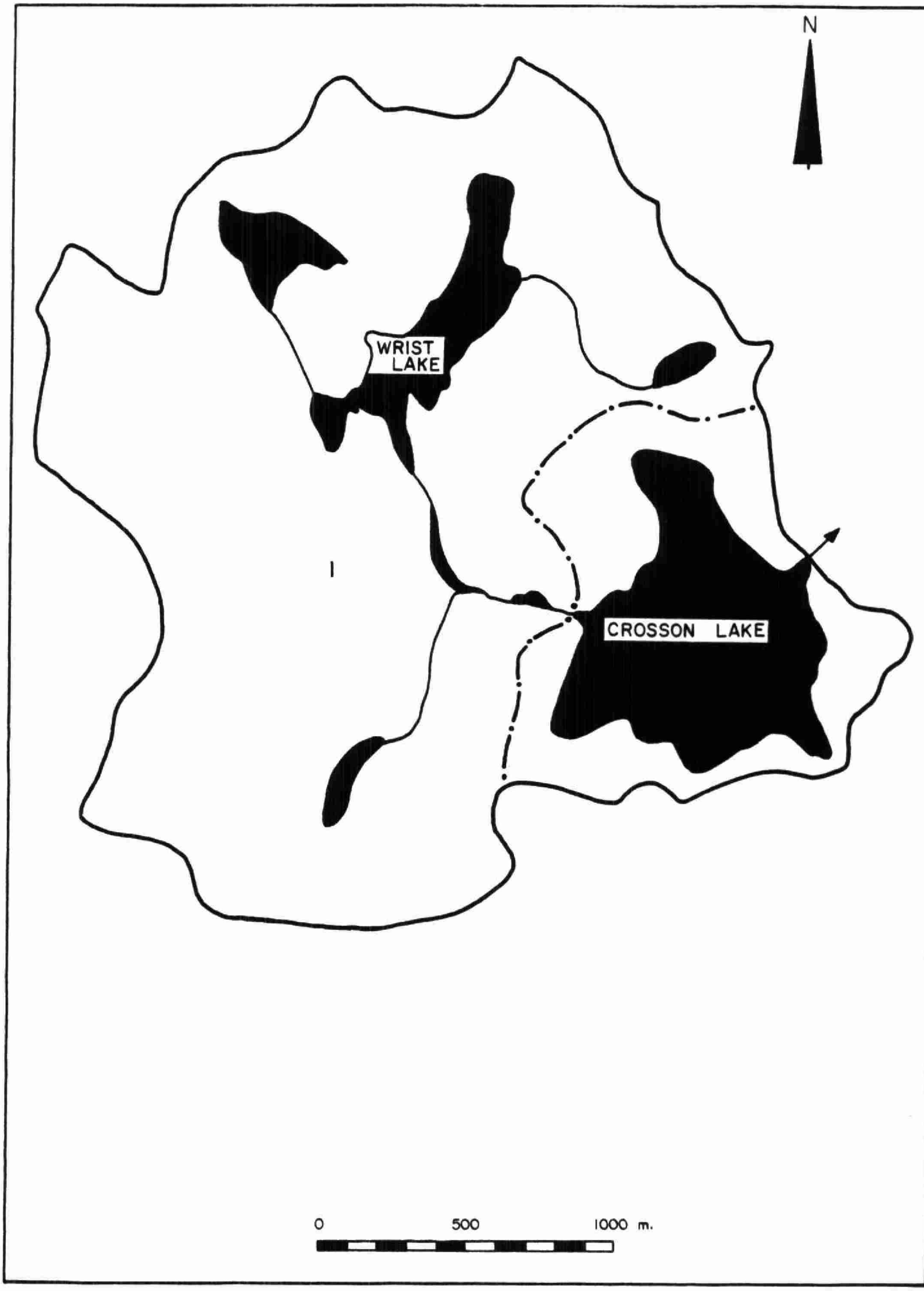


FIGURE 8

FIGURE 9



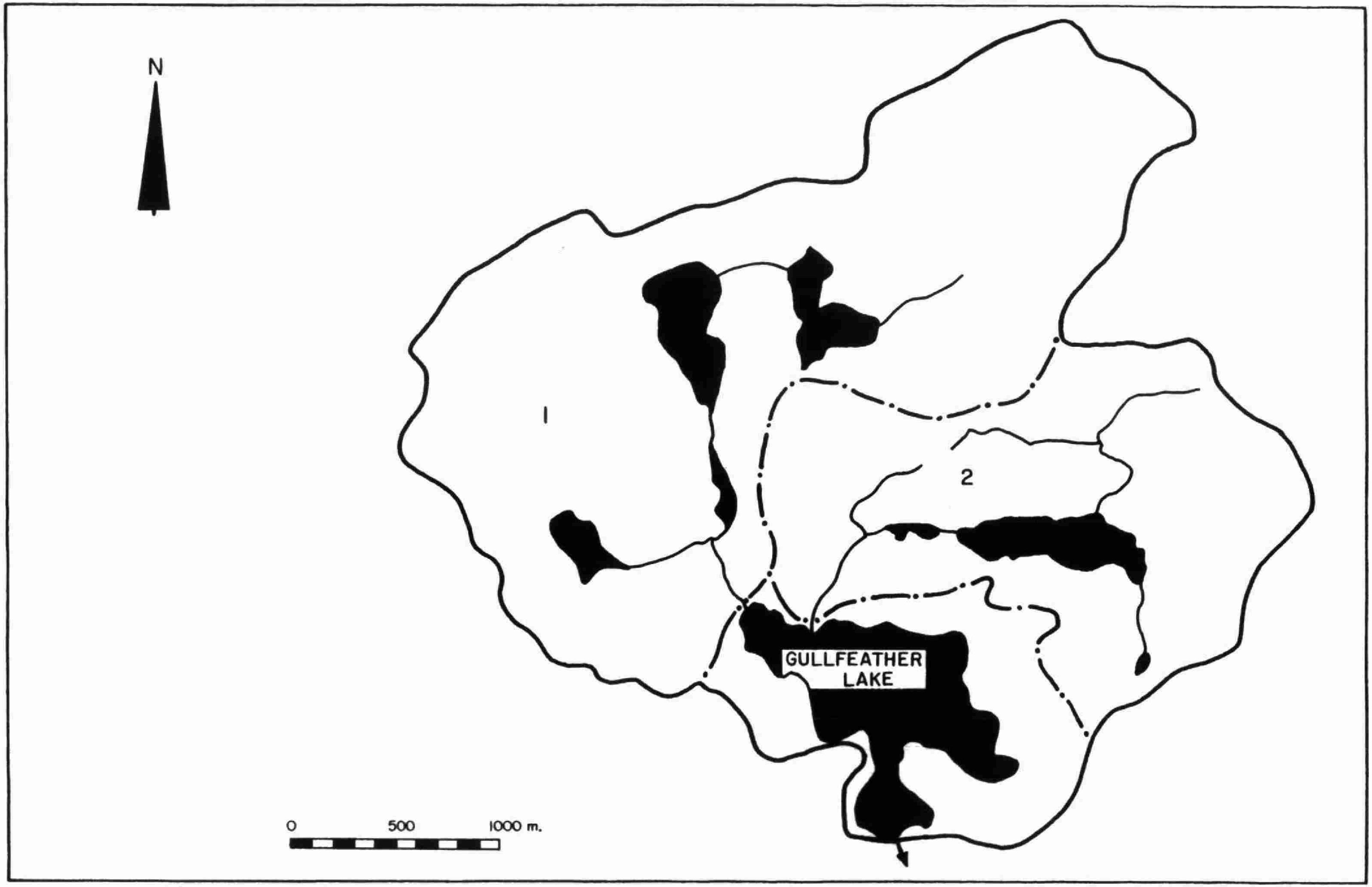


FIGURE 10

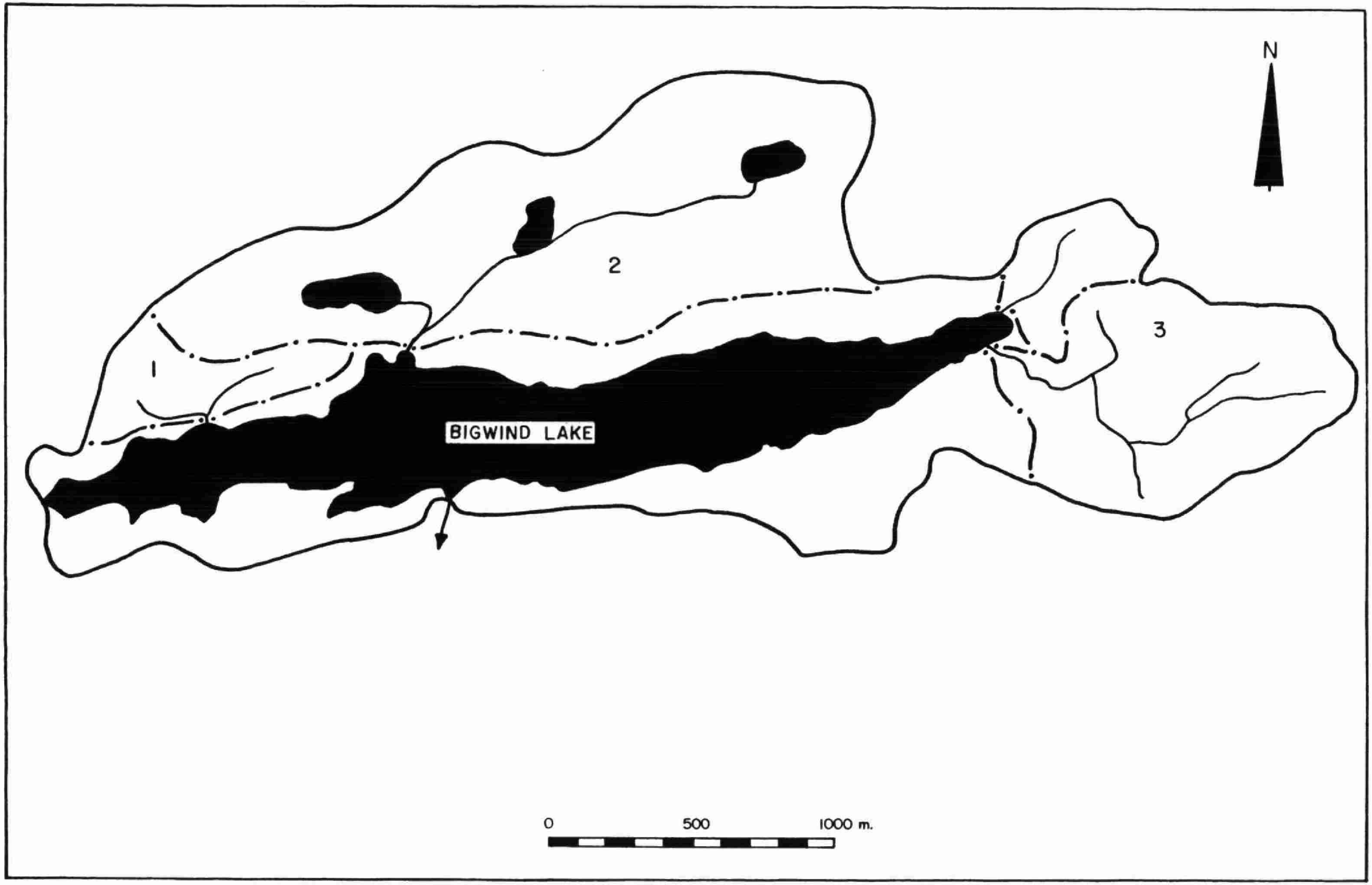
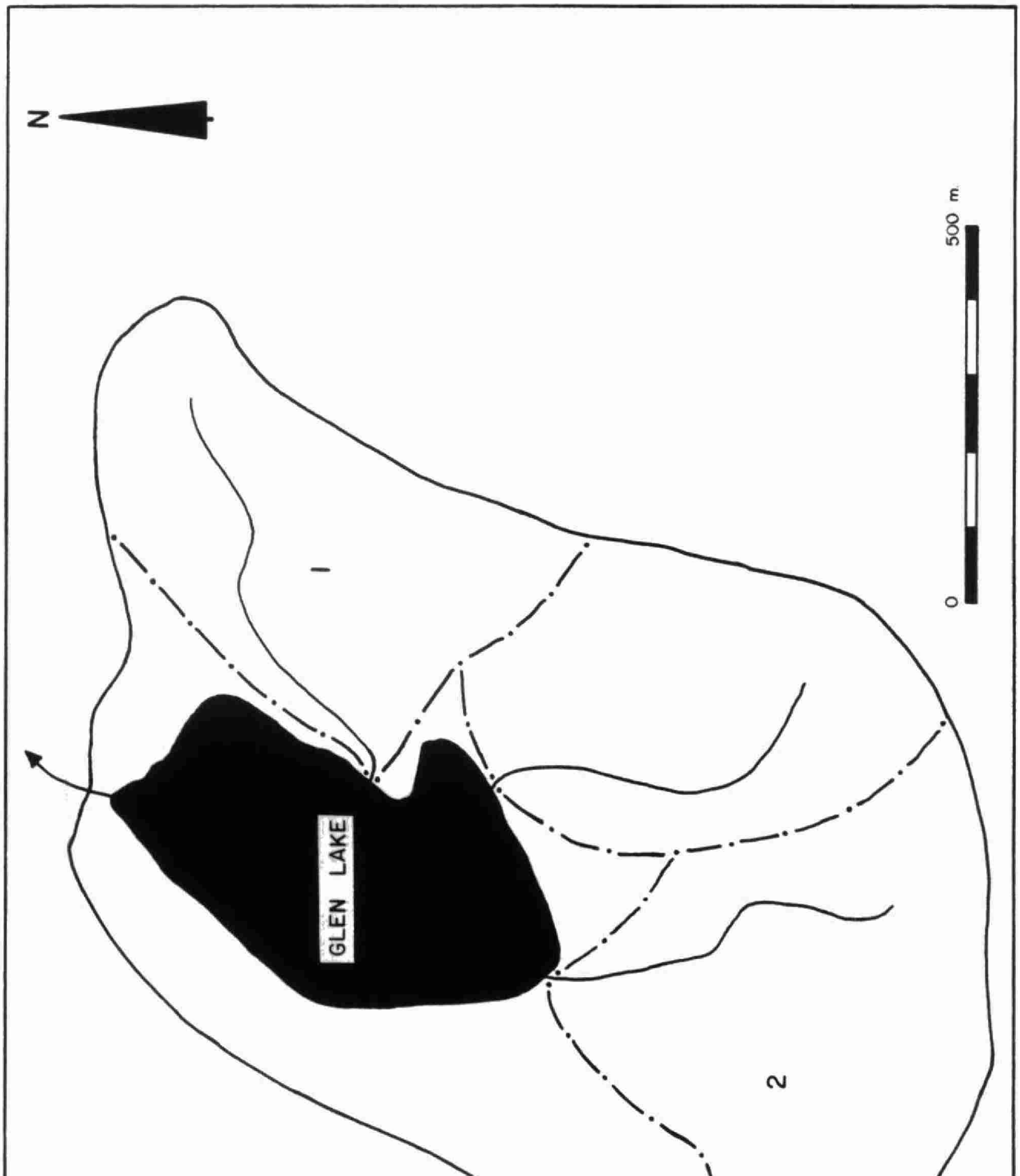


FIGURE 11

FIGURE 12



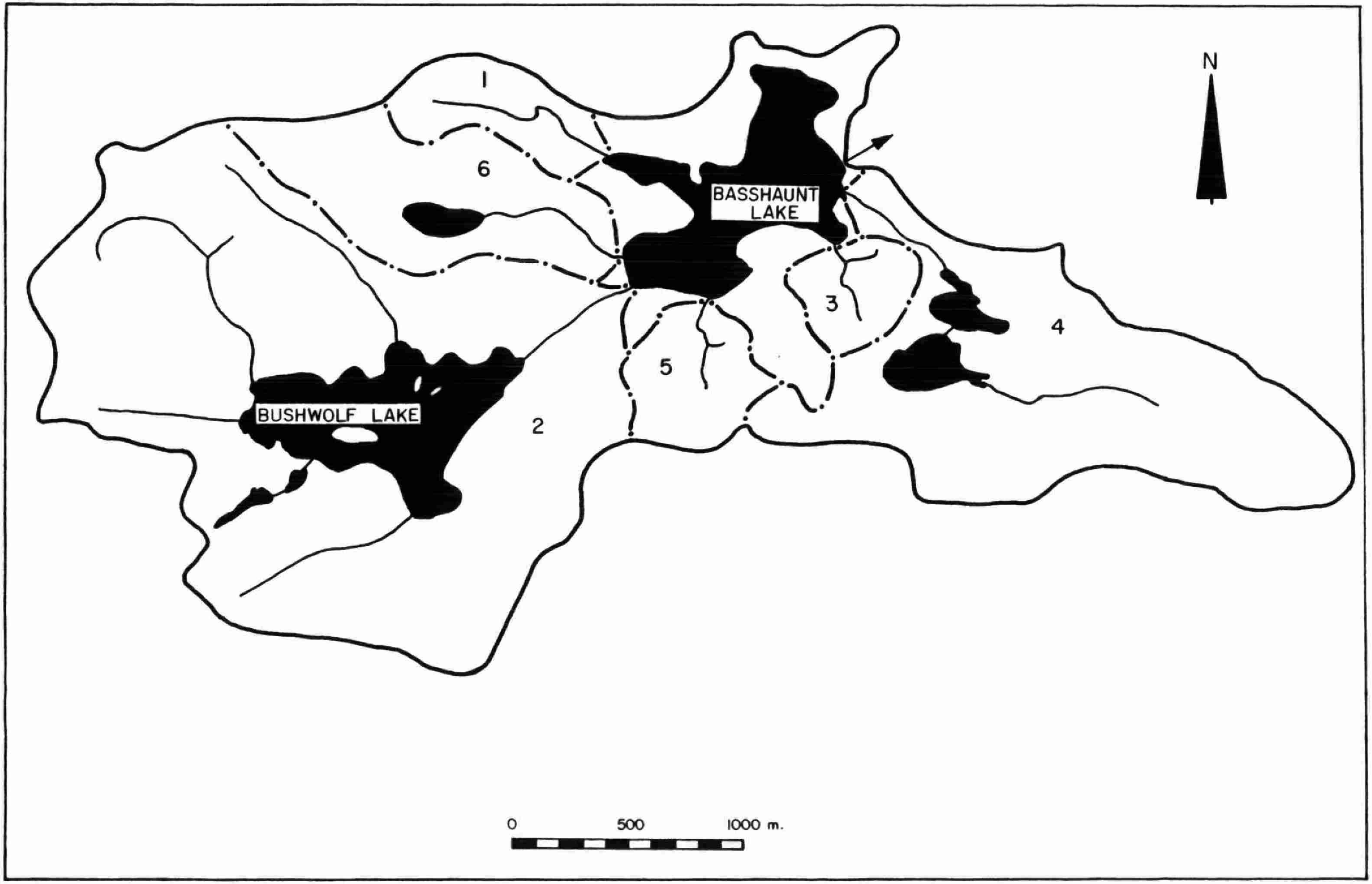


FIGURE 13

FIGURE 14

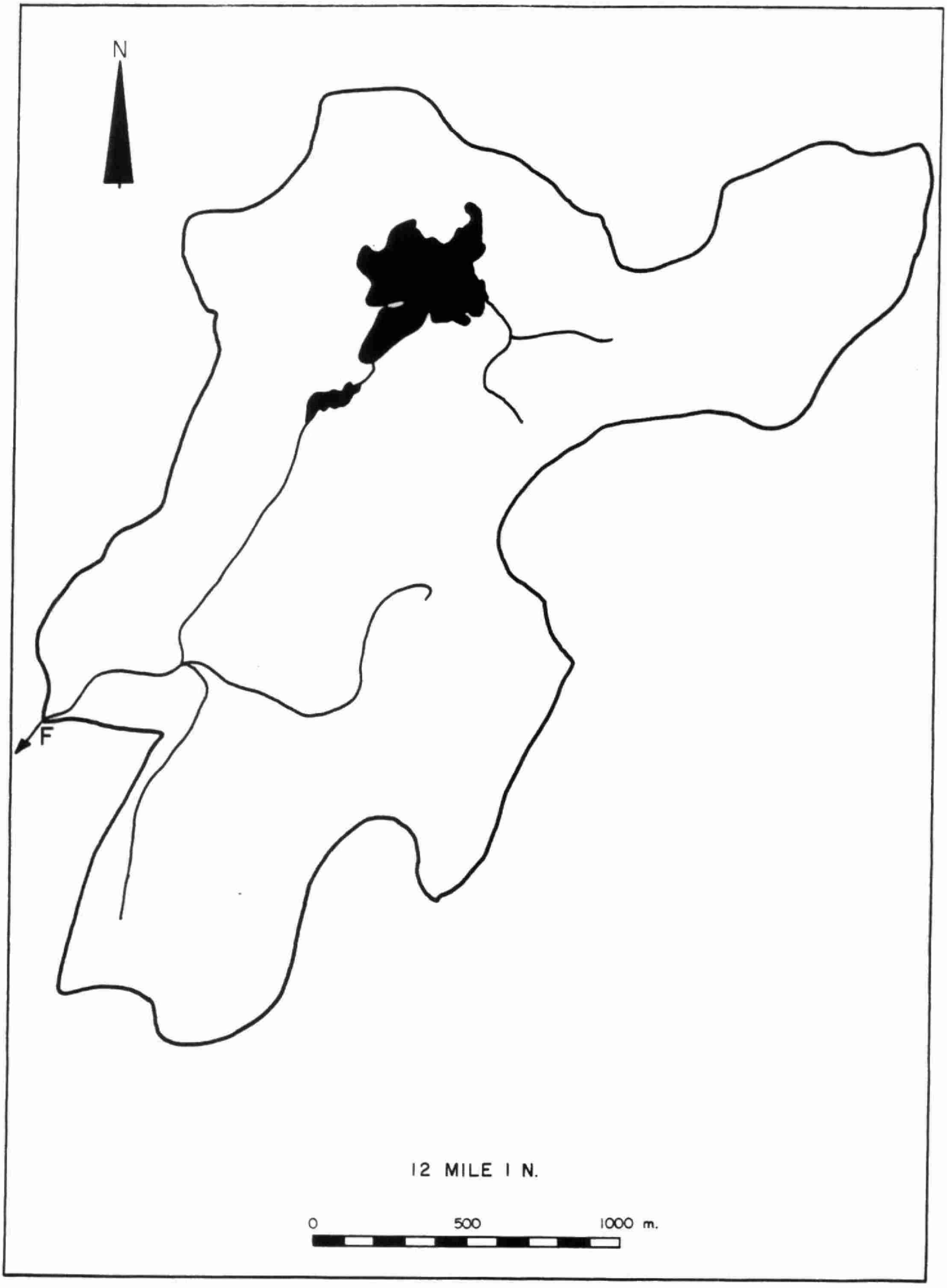


FIGURE 15

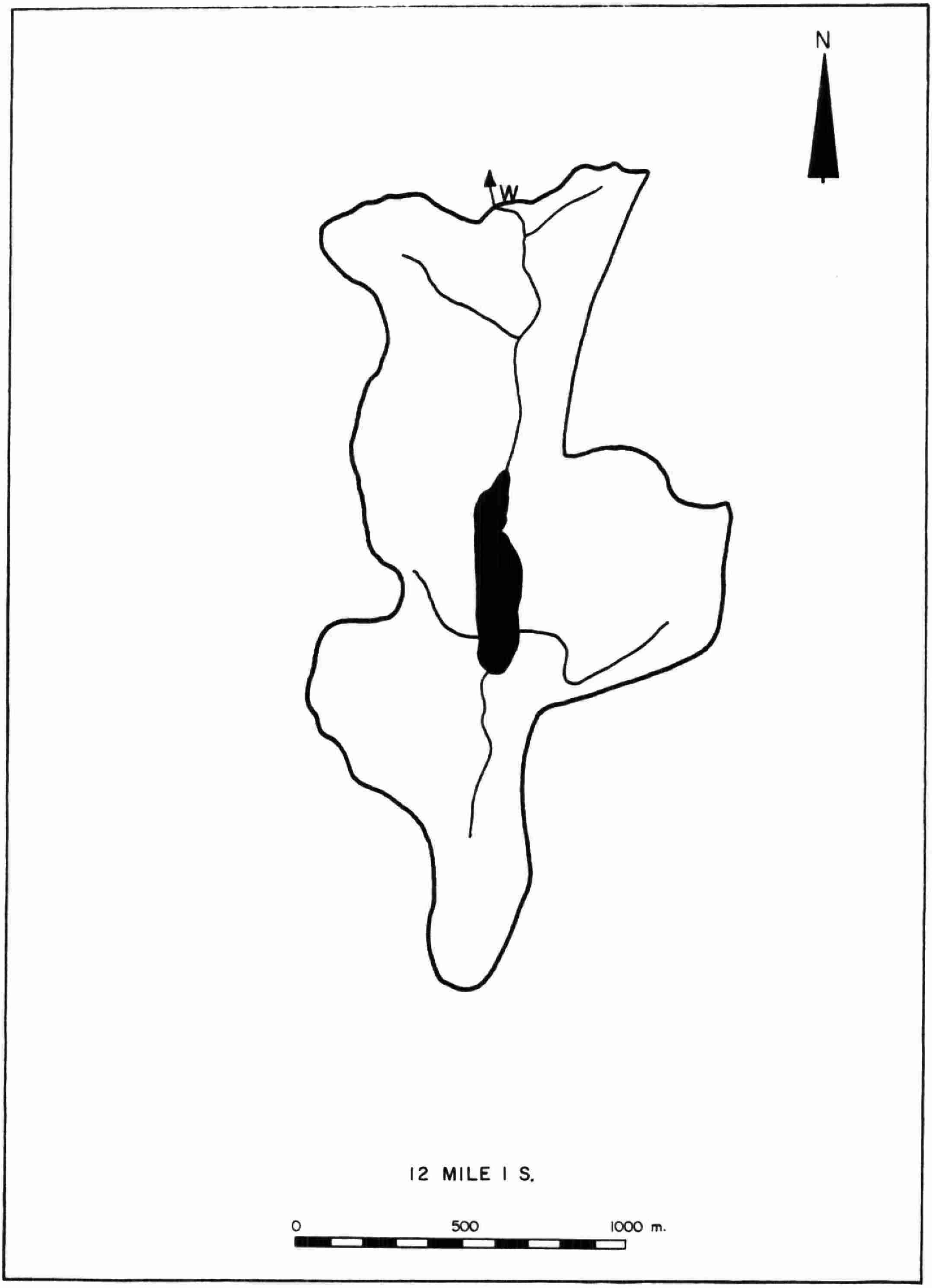
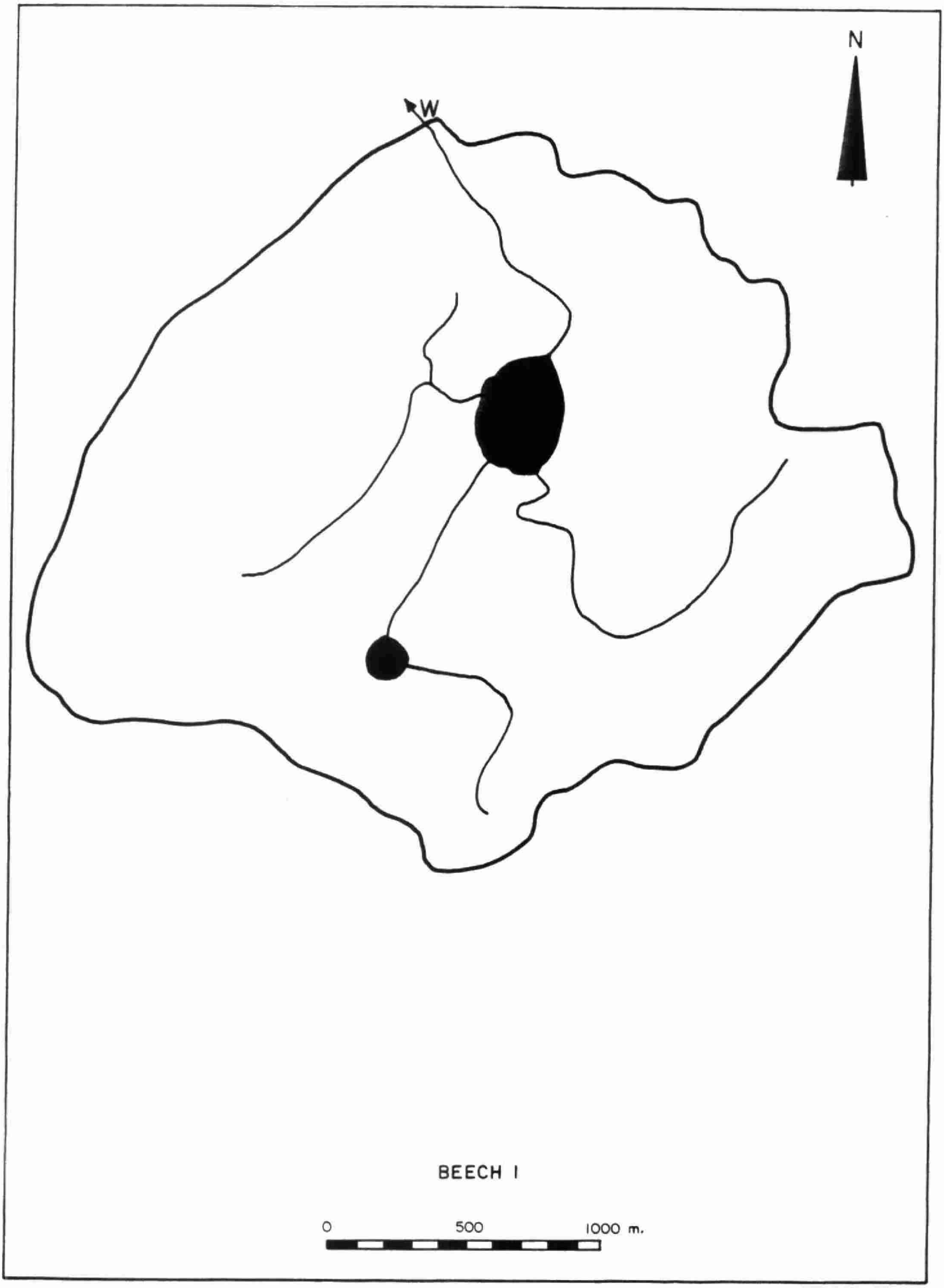
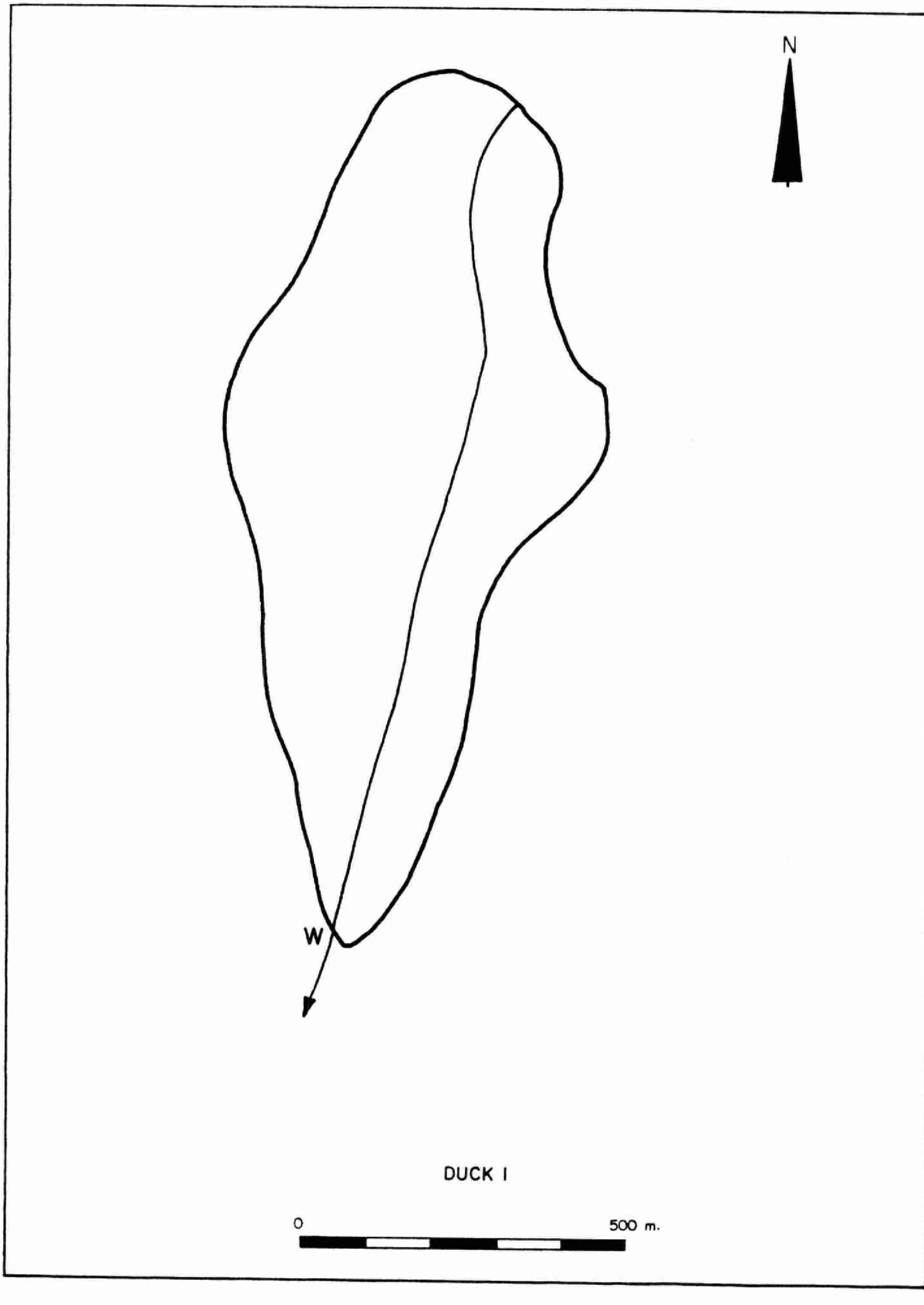


FIGURE 16



BEECH I

FIGURE 17



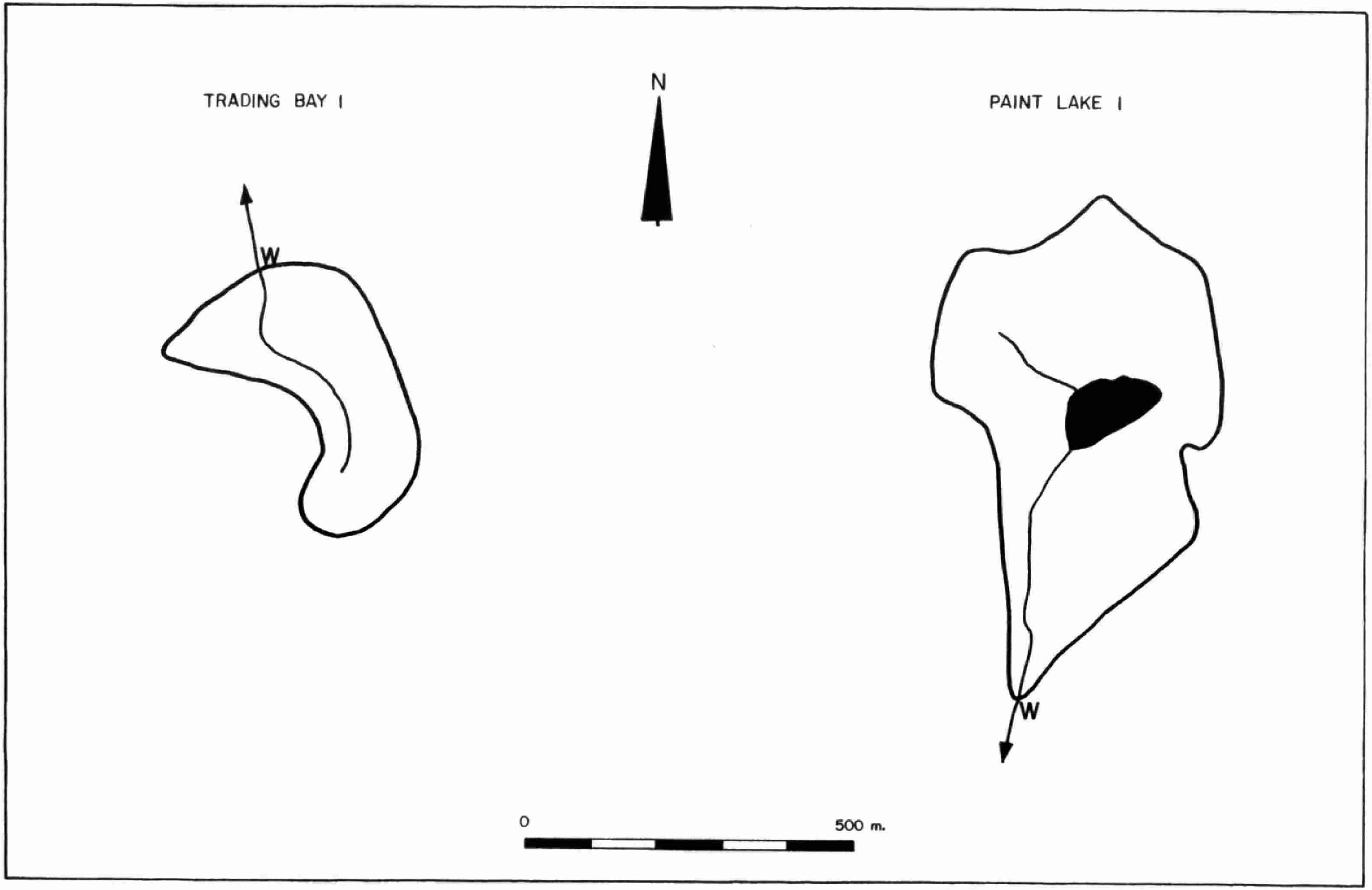


FIGURE 18

FIGURE 19

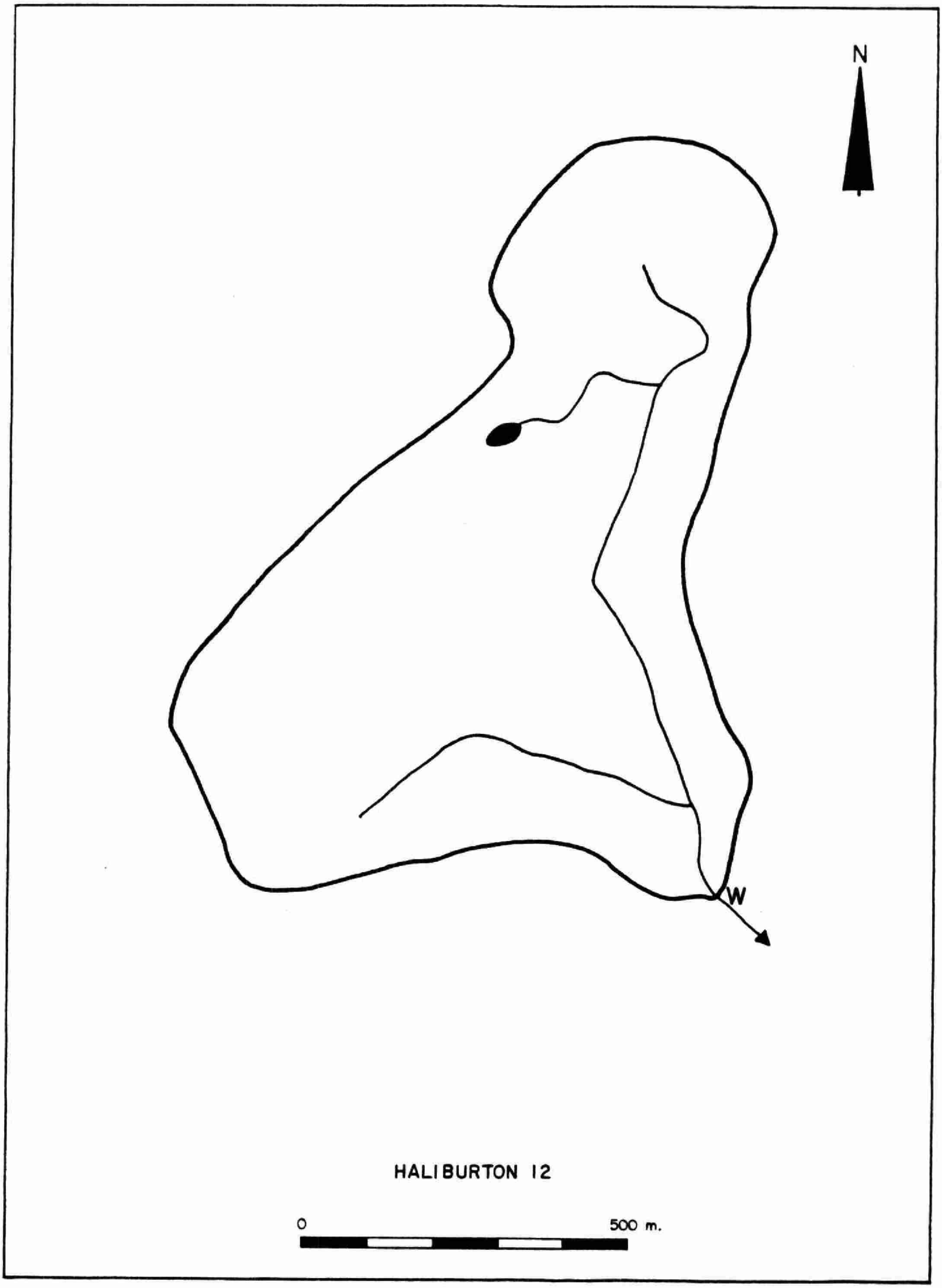


FIGURE 20

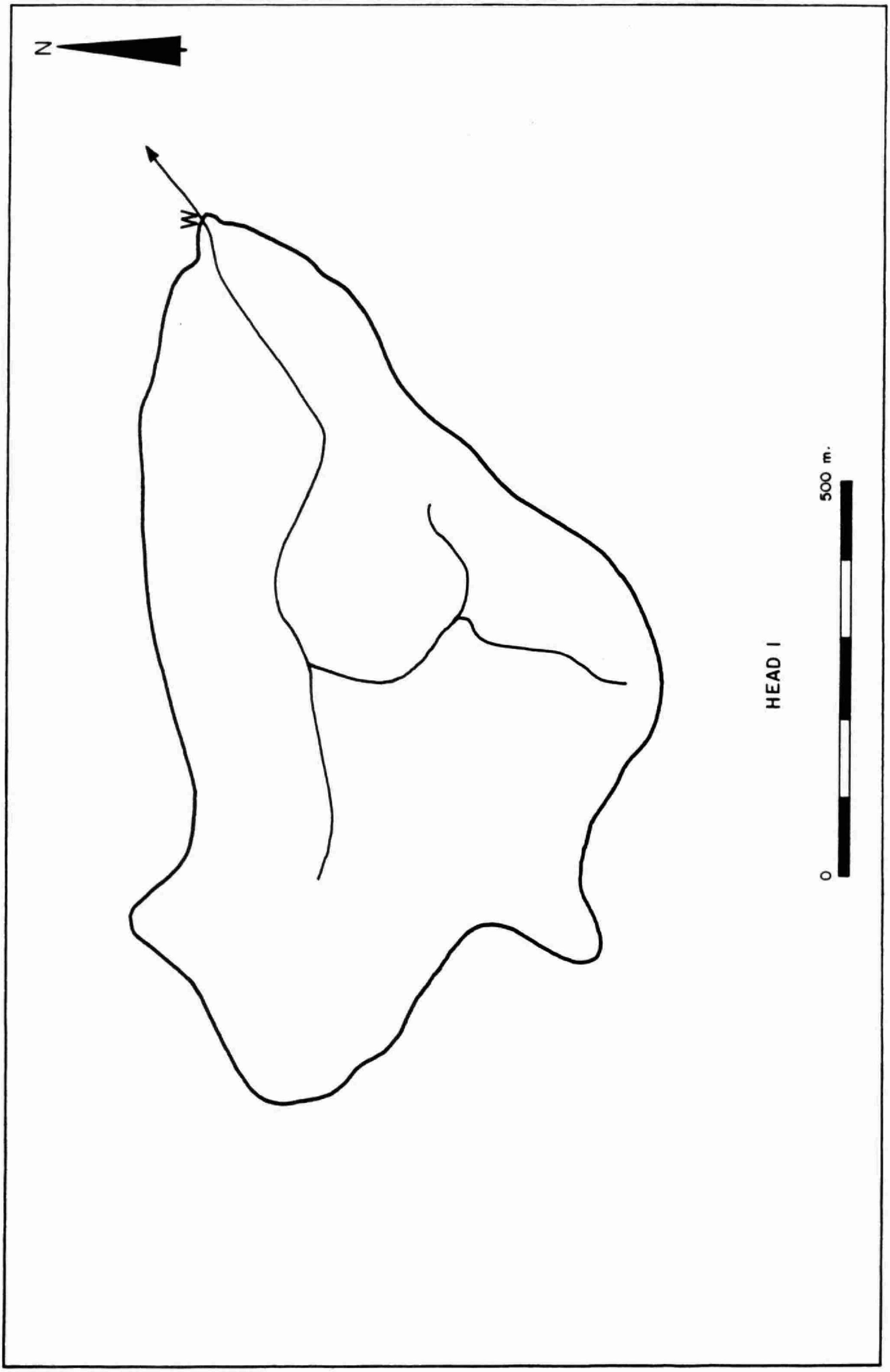


FIGURE 21

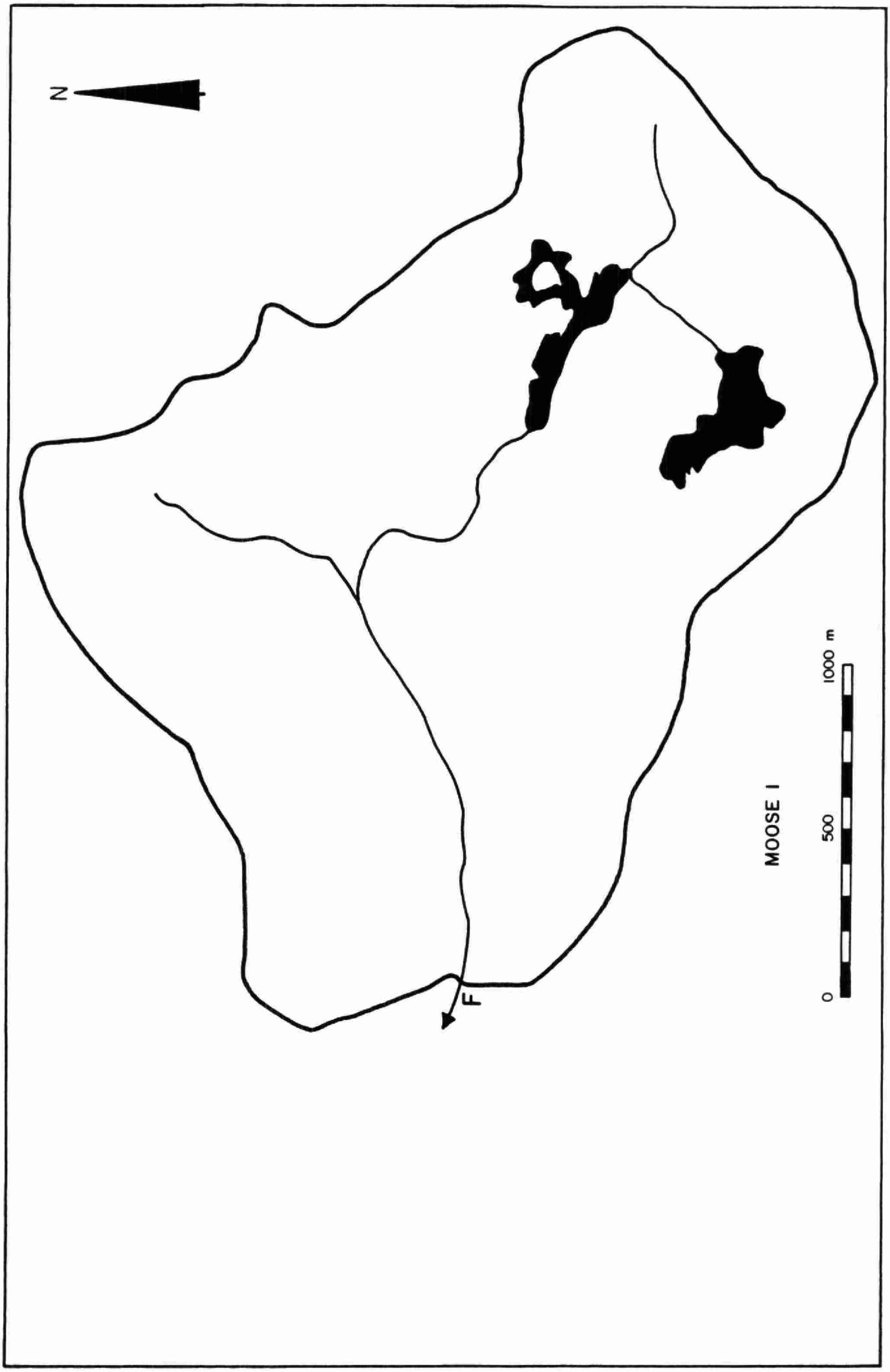


FIGURE 22

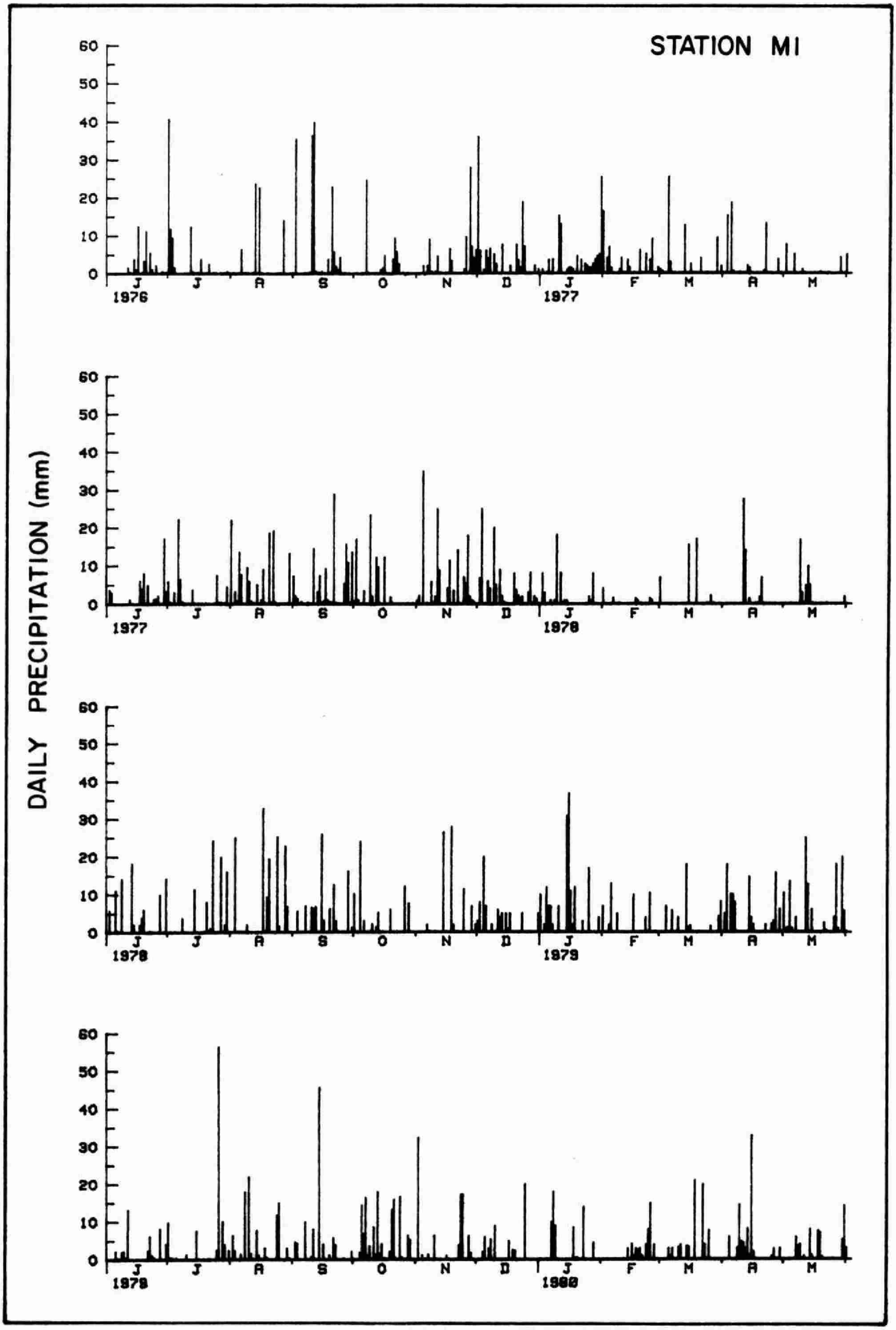

STATION MI
DAILY PRECIPITATION (mm)
60
50
40
30
20
10
0
J
J
A
S
O
N
D
J
F
M
A
M
1976
1977
1977
1978
1978
1979
1979
1980

FIGURE 23

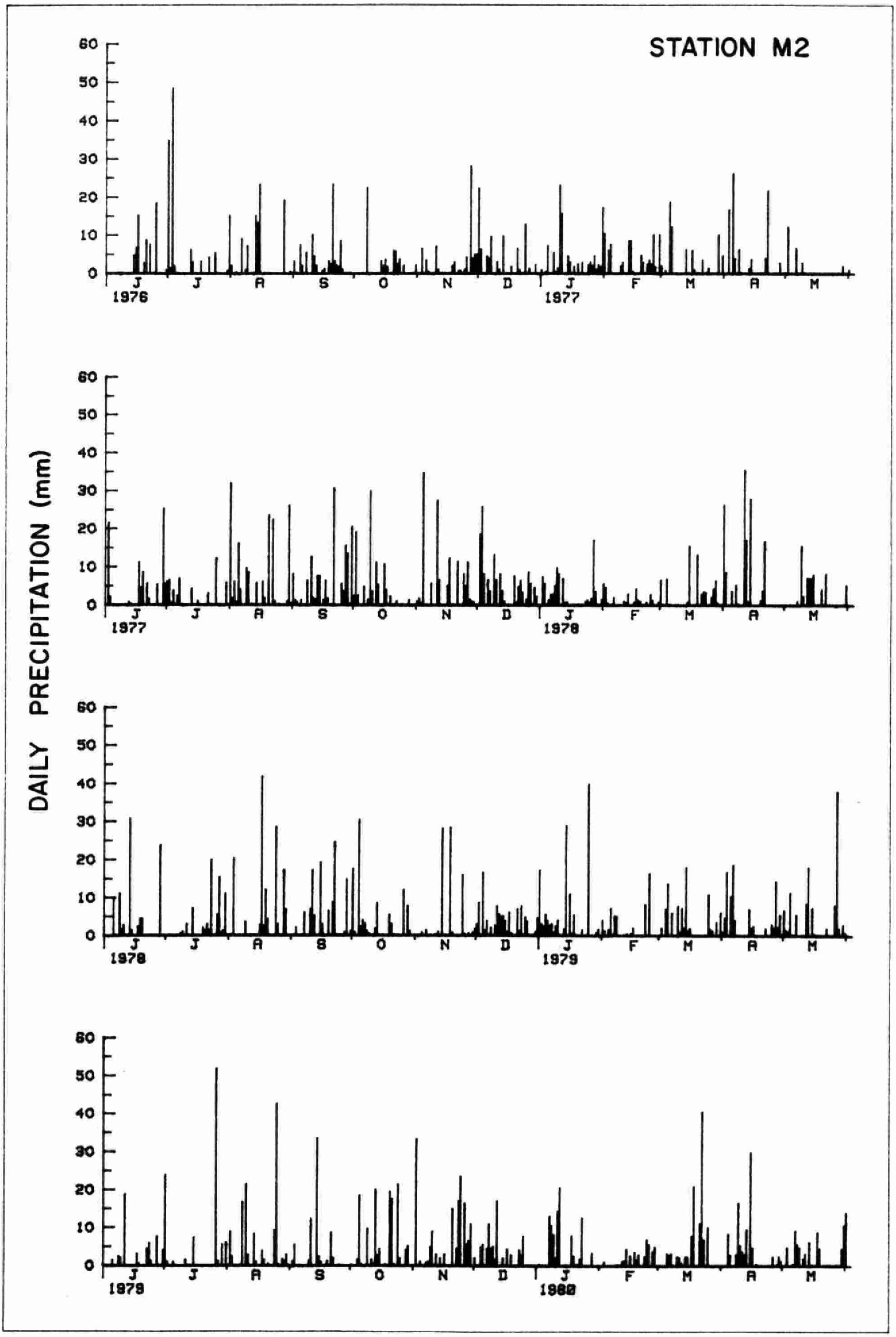

STATION M2
DAILY PRECIPITATION (mm)
60
50
40
30
20
10
0
J J A S O N D J F M A M
1976
1977
1977
1978
1978
1979
1979
1980

FIGURE 24

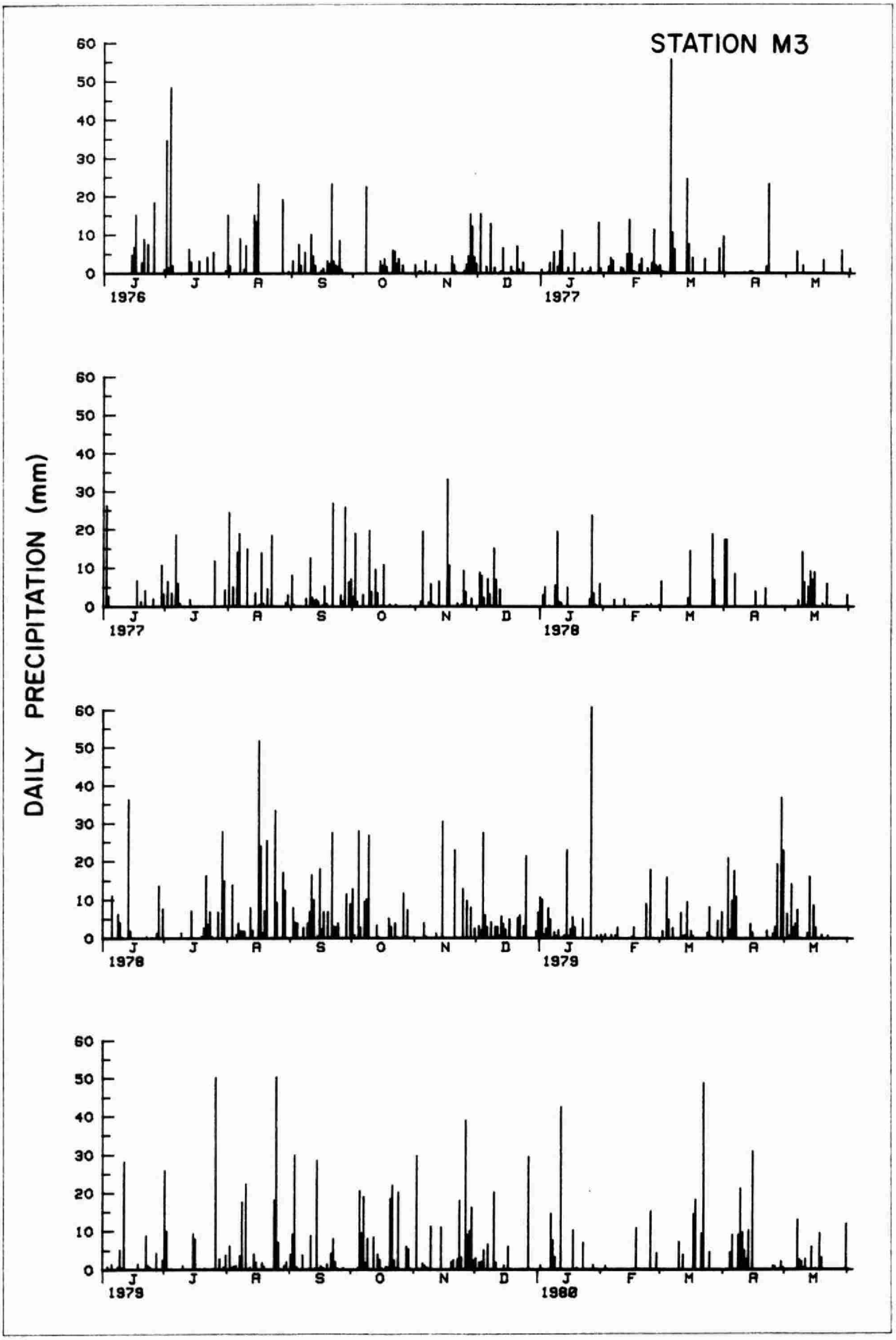

STATION M3
DAILY PRECIPITATION (mm)
60
50
40
30
20
10
0
J J A S O N D J F M A M
1976
1977
1977
1978
1978
1979
1979
1980

FIGURE 25

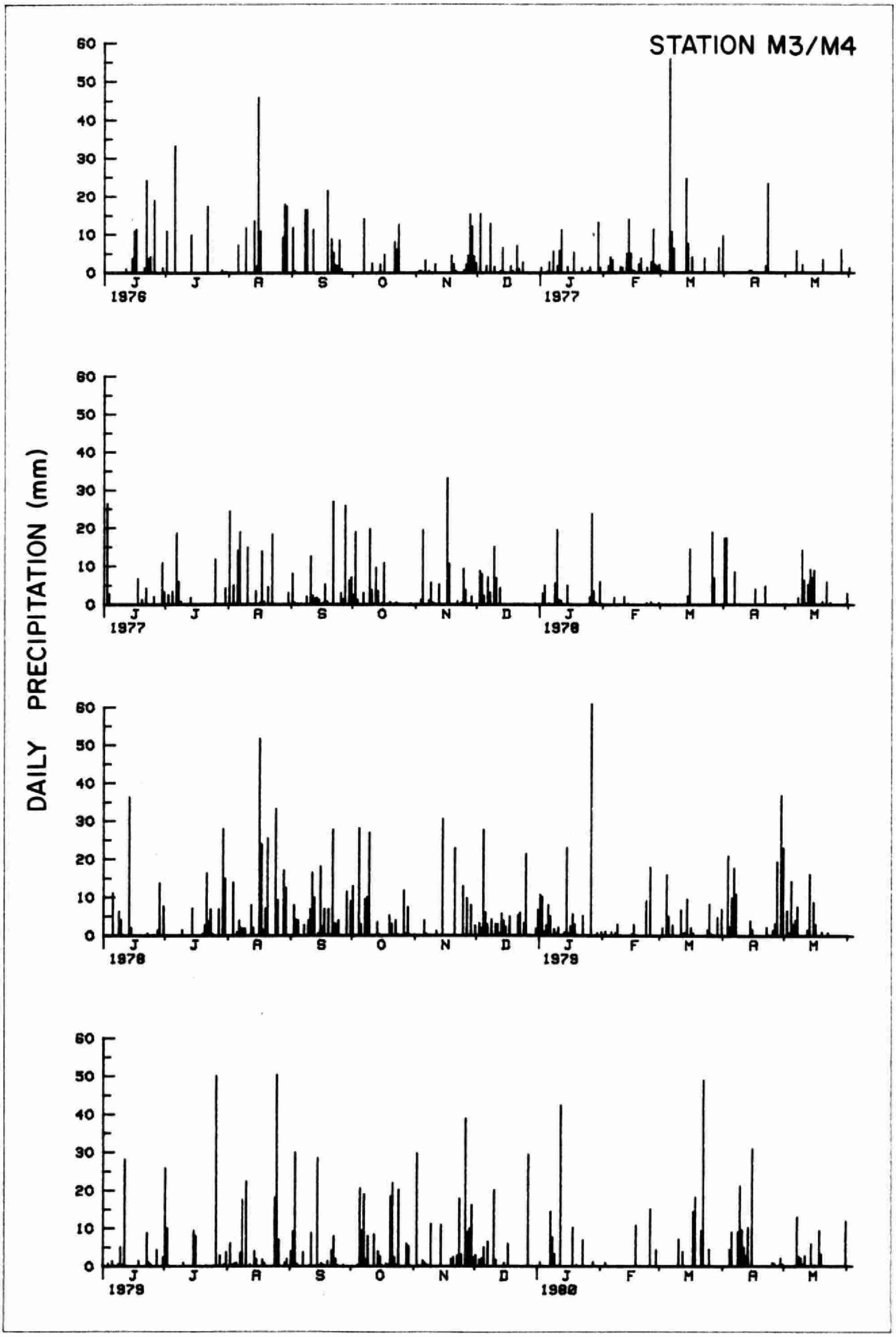
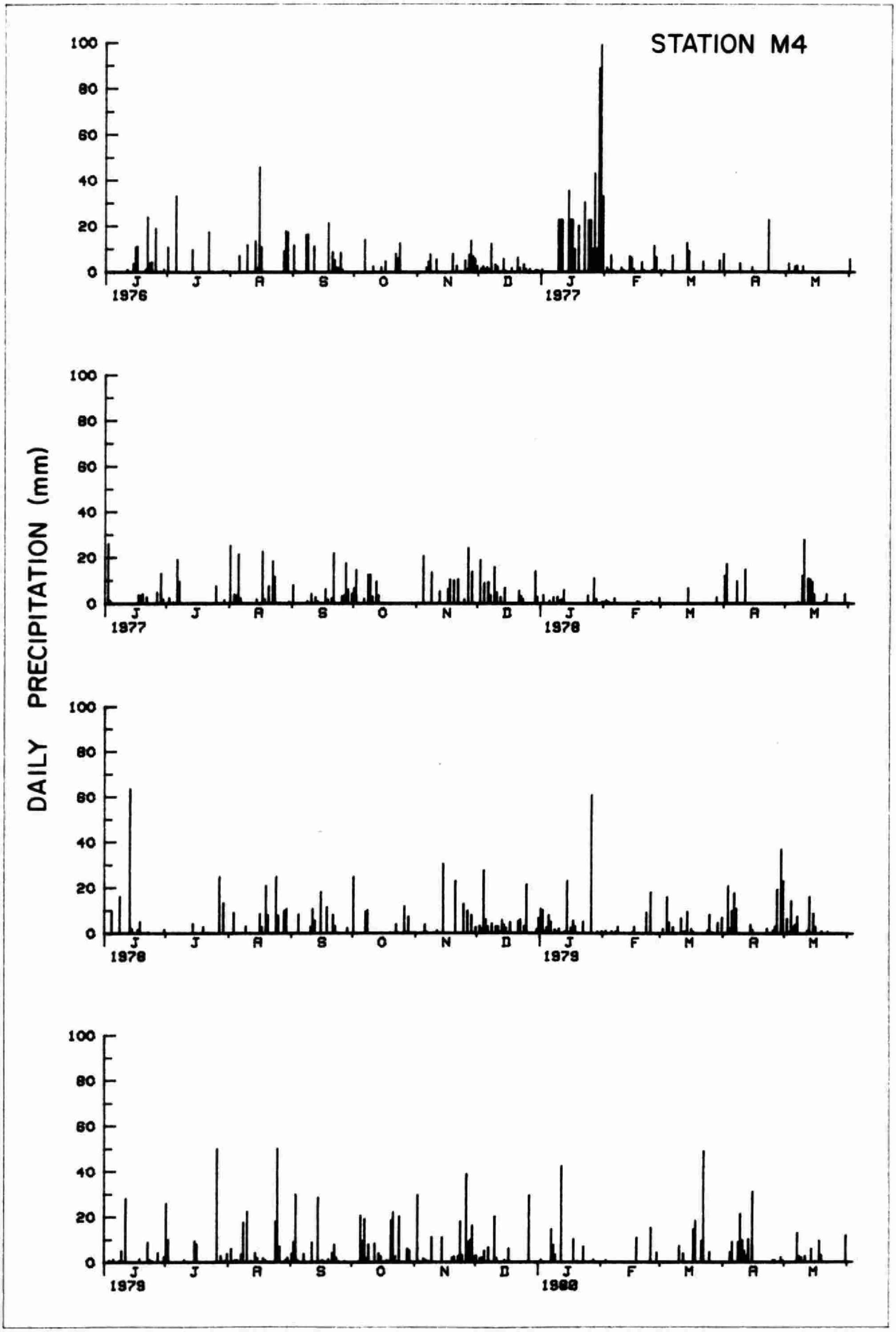

STATION M3/M4
DAILY PRECIPITATION (mm)
0
10
20
30
40
50
60
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 26



STATION M4
DAILY PRECIPITATION (mm)
100
80
60
40
20
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 27

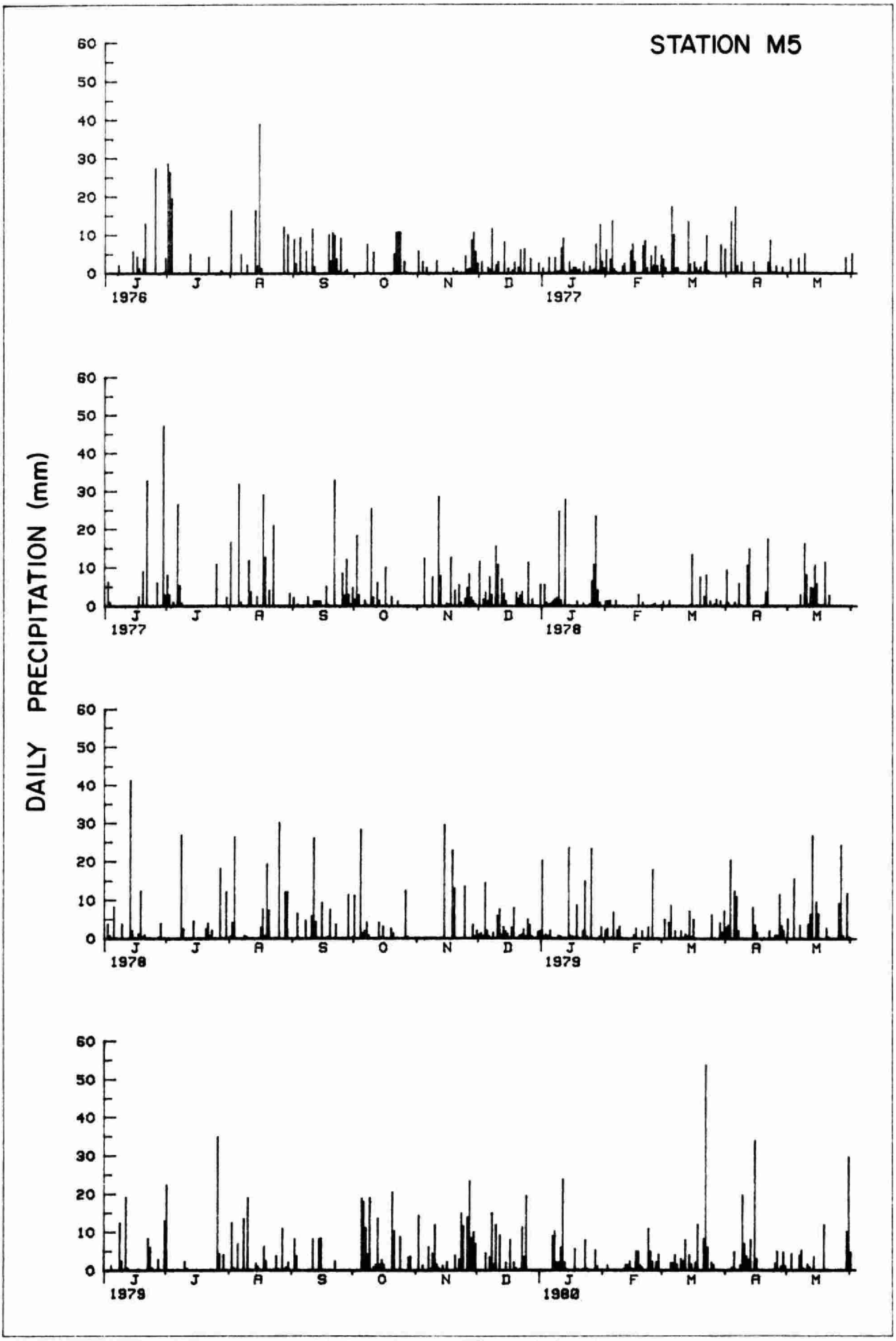
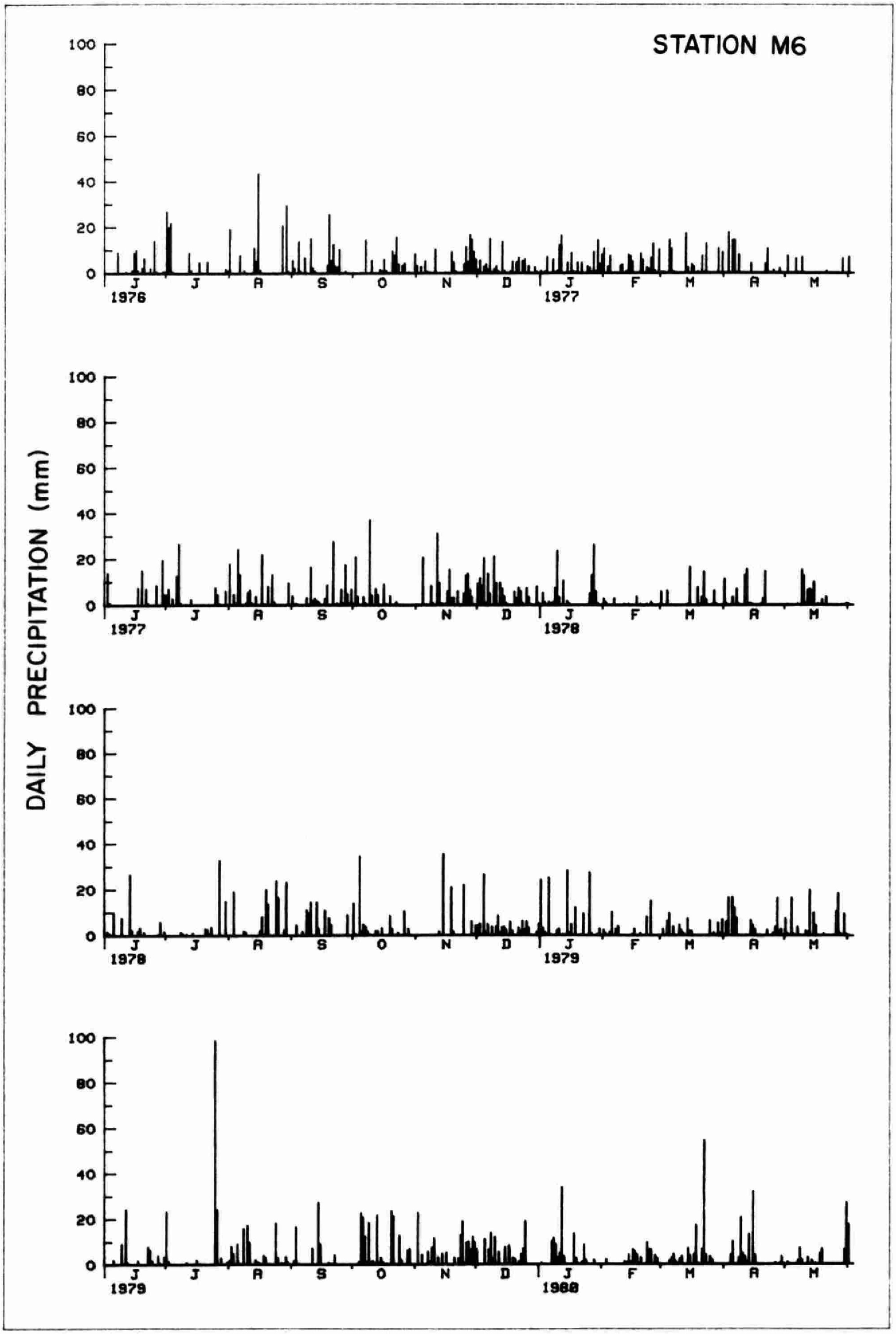


FIGURE 28


STATION M6
DAILY PRECIPITATION (mm)
100
80
60
40
20
0
J
J
A
S
O
N
D
J
F
M
A
M
1976
1977
1978
1979
1980

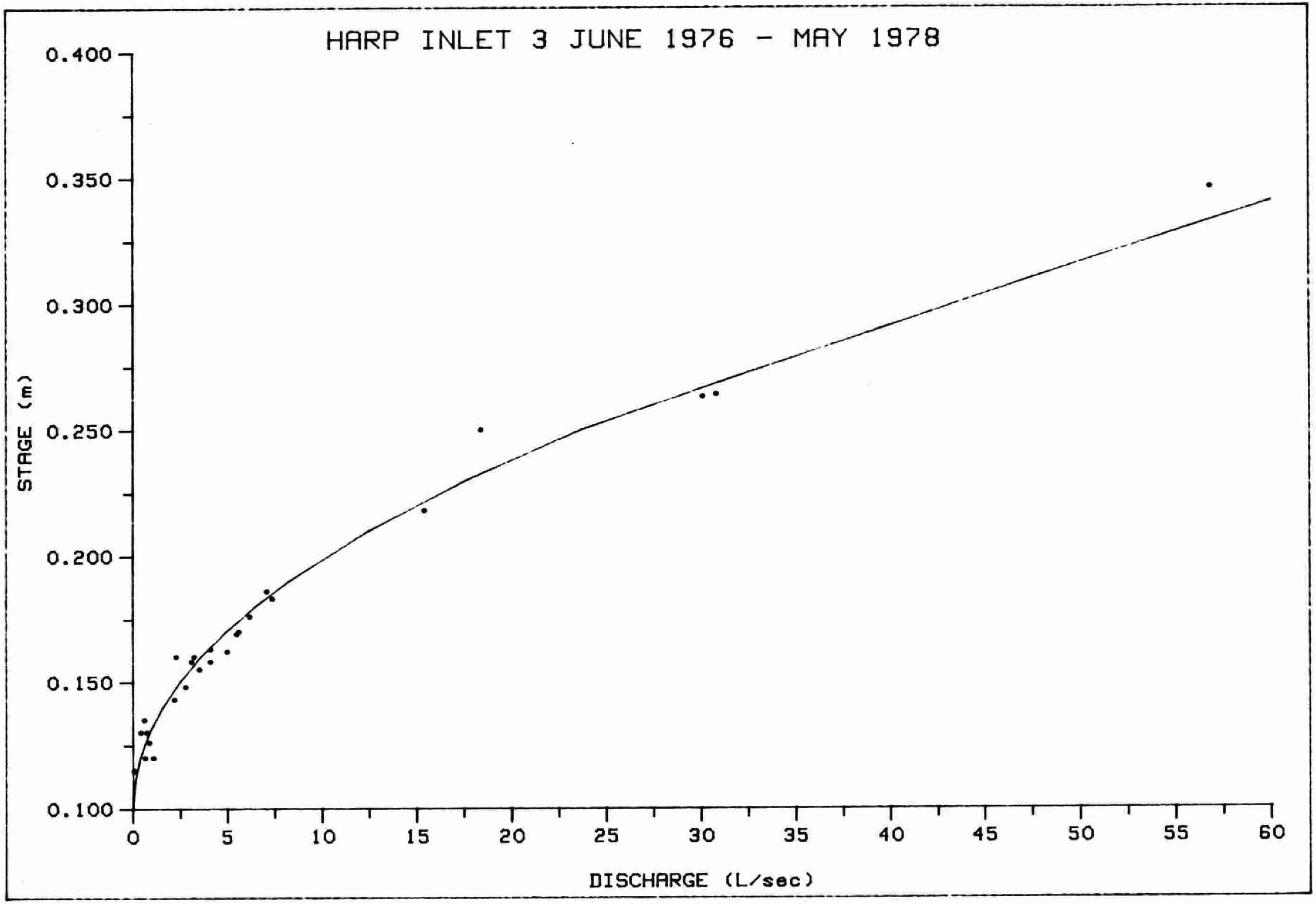

HARP INLET 3 JUNE 1976 - MAY 1978
STAGE (m)
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0
5
10
15
20
25
30
35
40
45
50
55
60
DISCHARGE (L/sec)

FIGURE 29

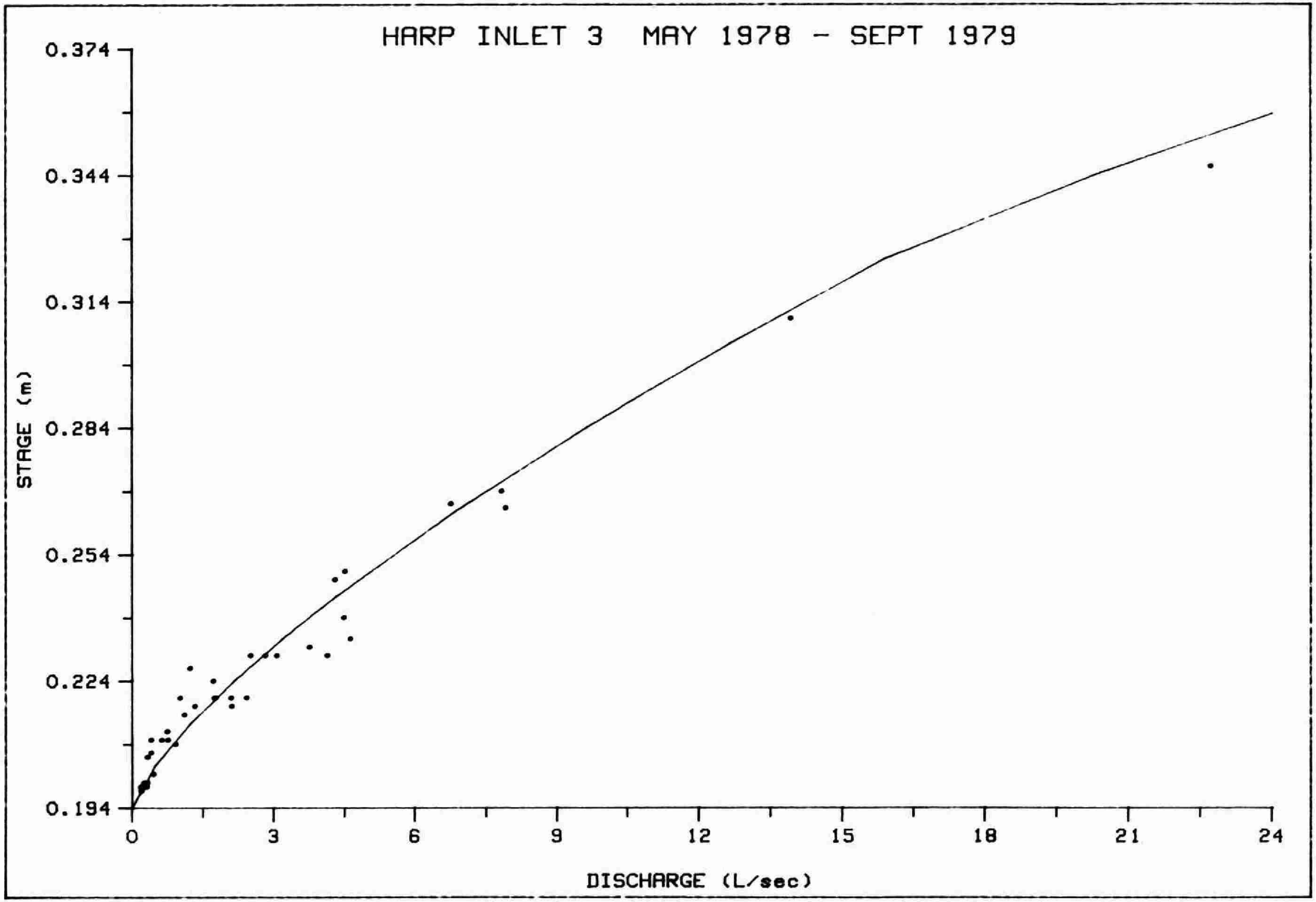

HARP INLET 3 MAY 1978 - SEPT 1979
STAGE (m)
0.374
0.344
0.314
0.284
0.254
0.224
0.194
0
3
6
9
12
15
18
21
24
DISCHARGE (L/sec)

FIGURE 30

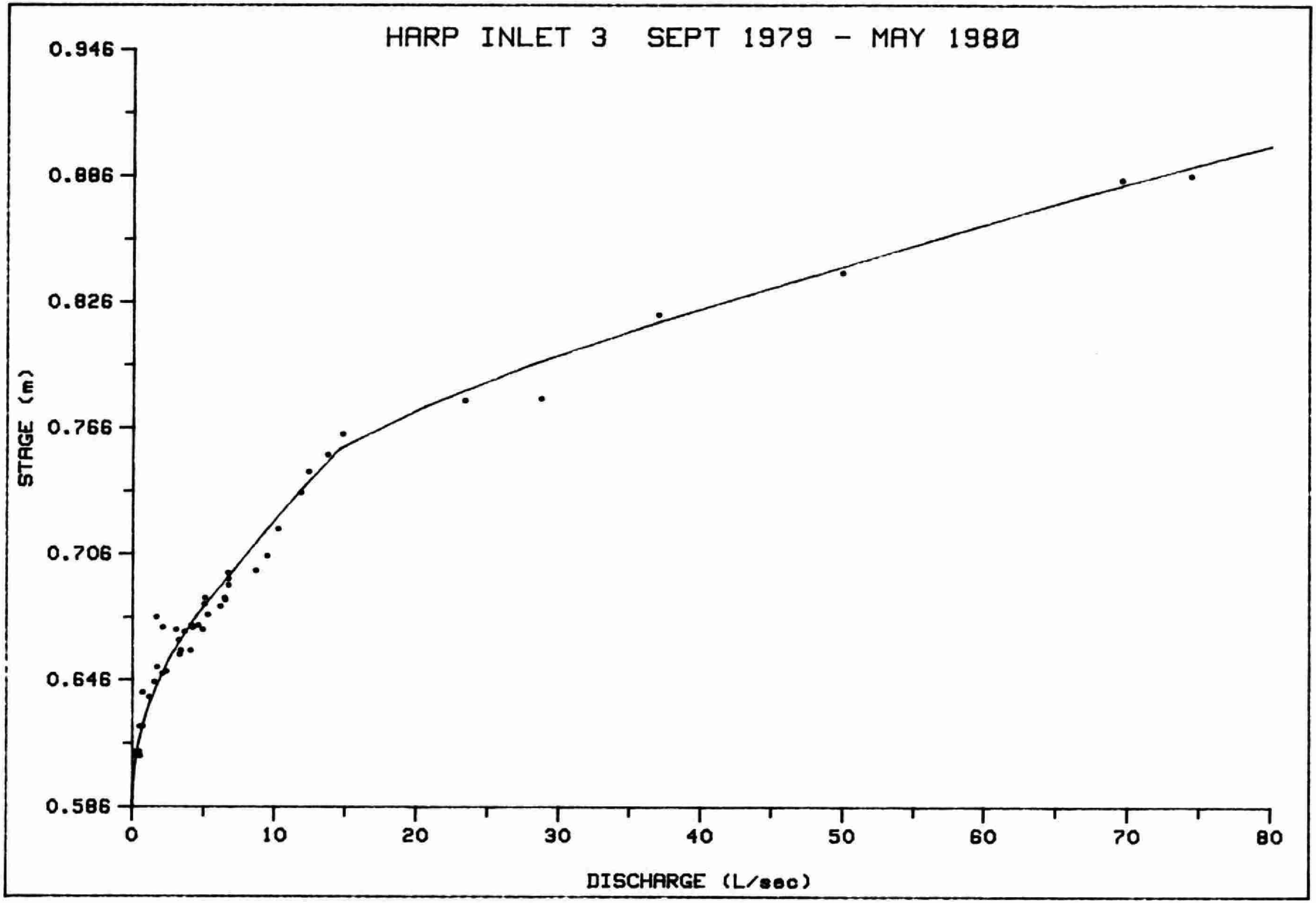
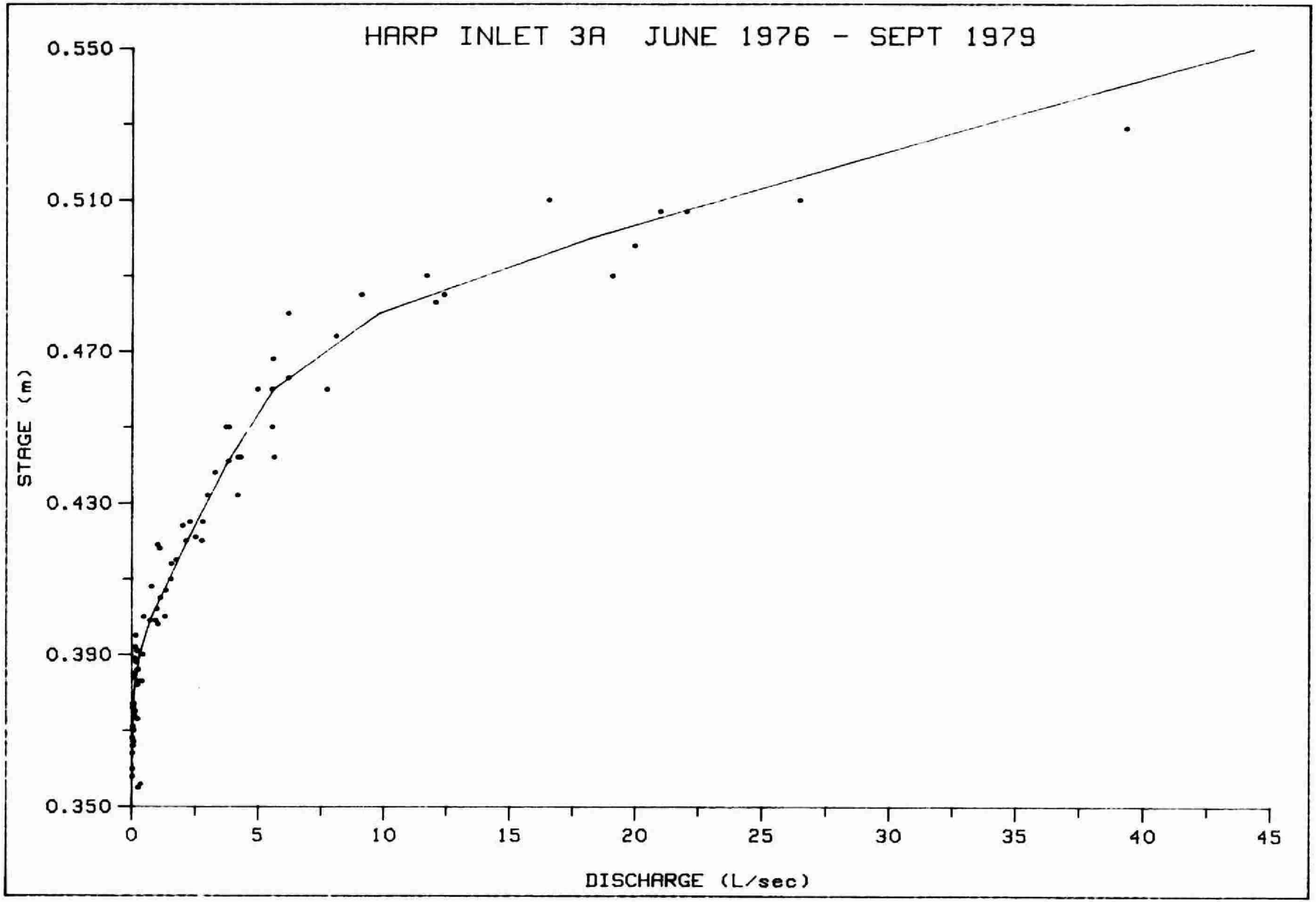

HARP INLET 3 SEPT 1979 - MAY 1980
STAGE (m)
0.946
0.886
0.826
0.766
0.706
0.646
0.586
0
10
20
30
40
50
60
70
80
DISCHARGE (L/sec)

FIGURE 31



HARP INLET 3A JUNE 1976 - SEPT 1979
STAGE (m)
0.550
0.510
0.470
0.430
0.390
0.350
0
5
10
15
20
25
30
35
40
45
DISCHARGE (L/sec)

FIGURE 32

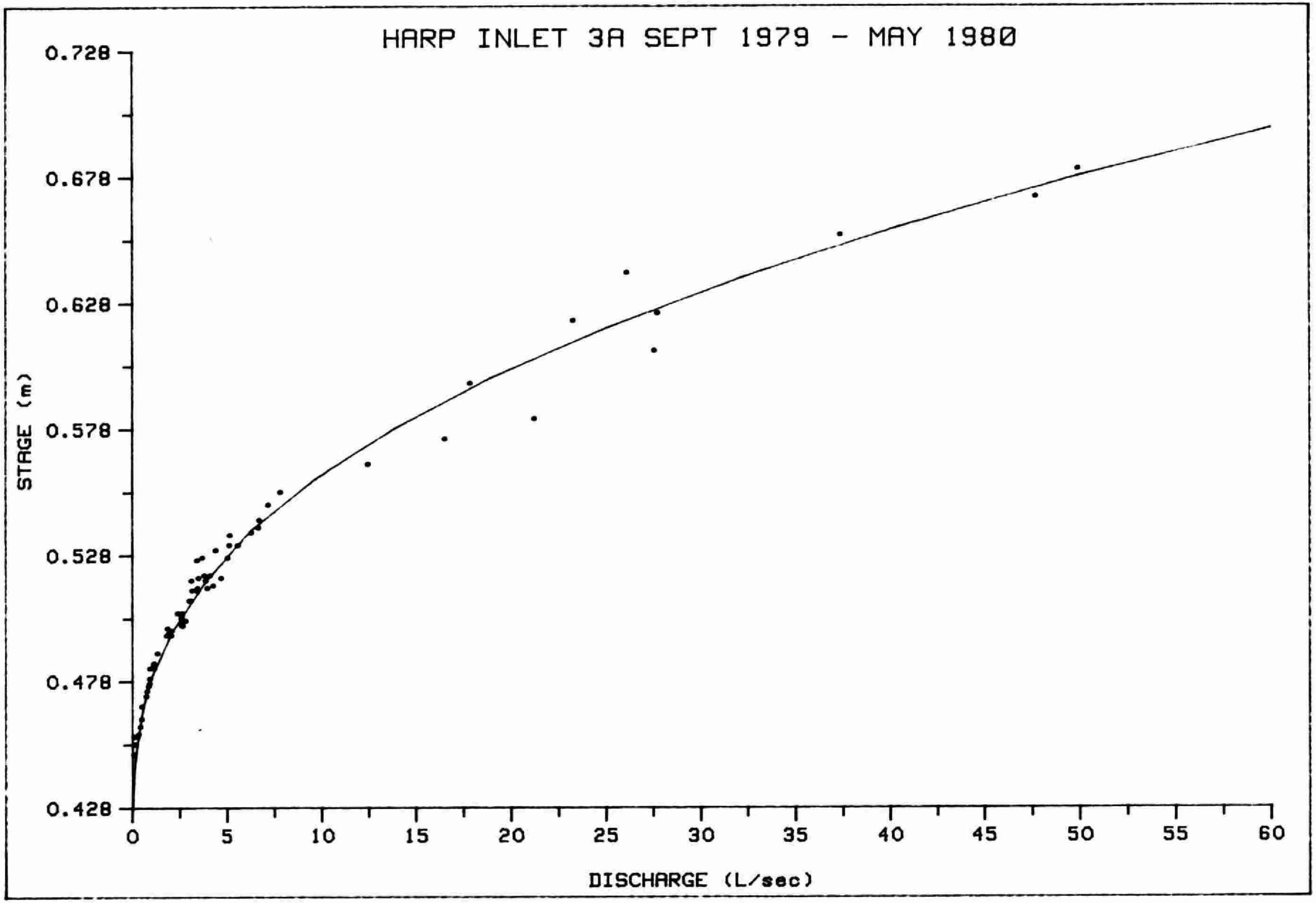
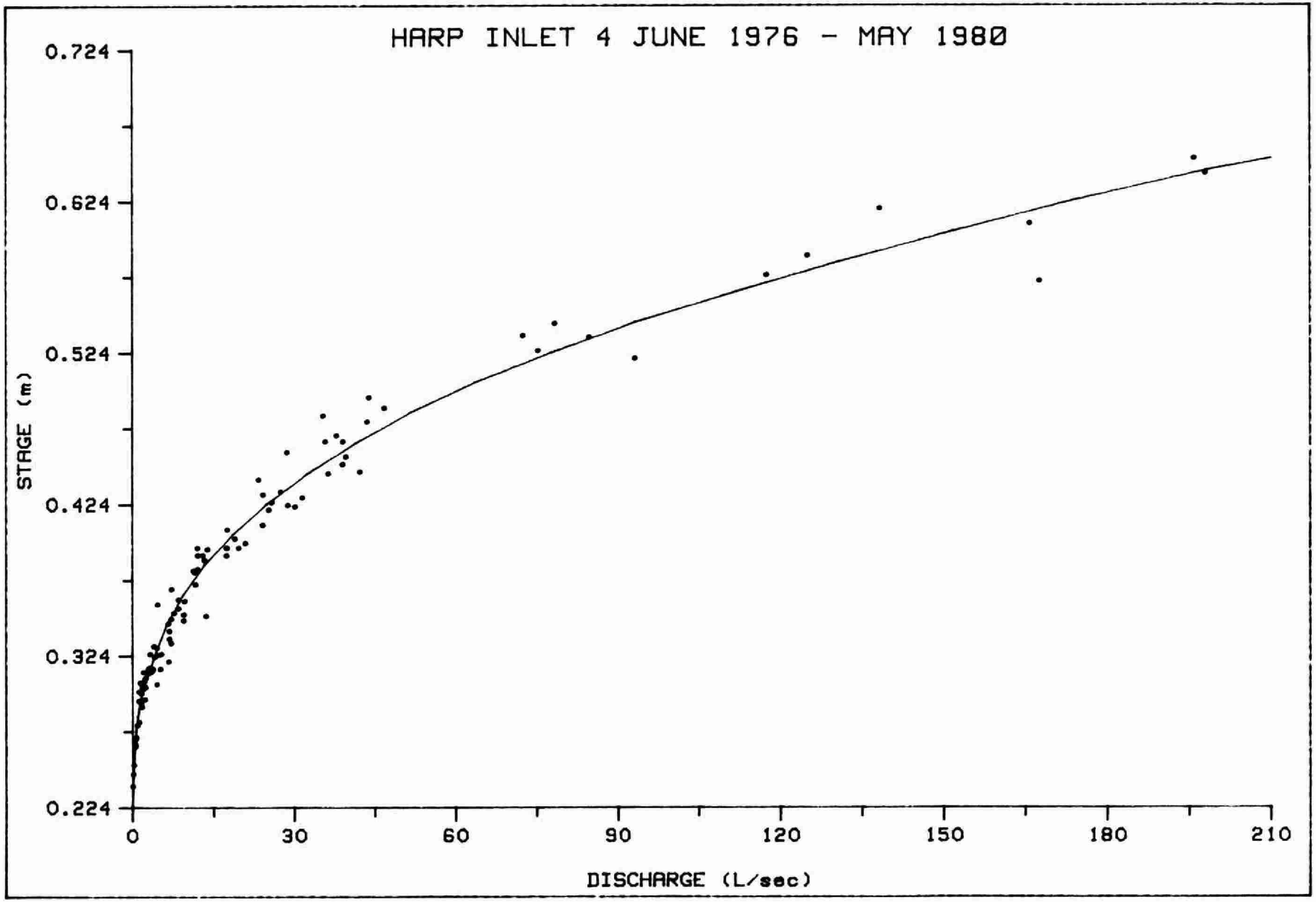

HARP INLET 3A SEPT 1979 - MAY 1980
STAGE (m)
0.728
0.678
0.628
0.578
0.528
0.478
0.428
0
5
10
15
20
25
30
35
40
45
50
55
60
DISCHARGE (L/sec)

FIGURE 33



HARP INLET 4 JUNE 1976 - MAY 1980
STAGE (m)
0.724
0.624
0.524
0.424
0.324
0.224
0
30
60
90
120
150
180
210
DISCHARGE (L/sec)

FIGURE 34

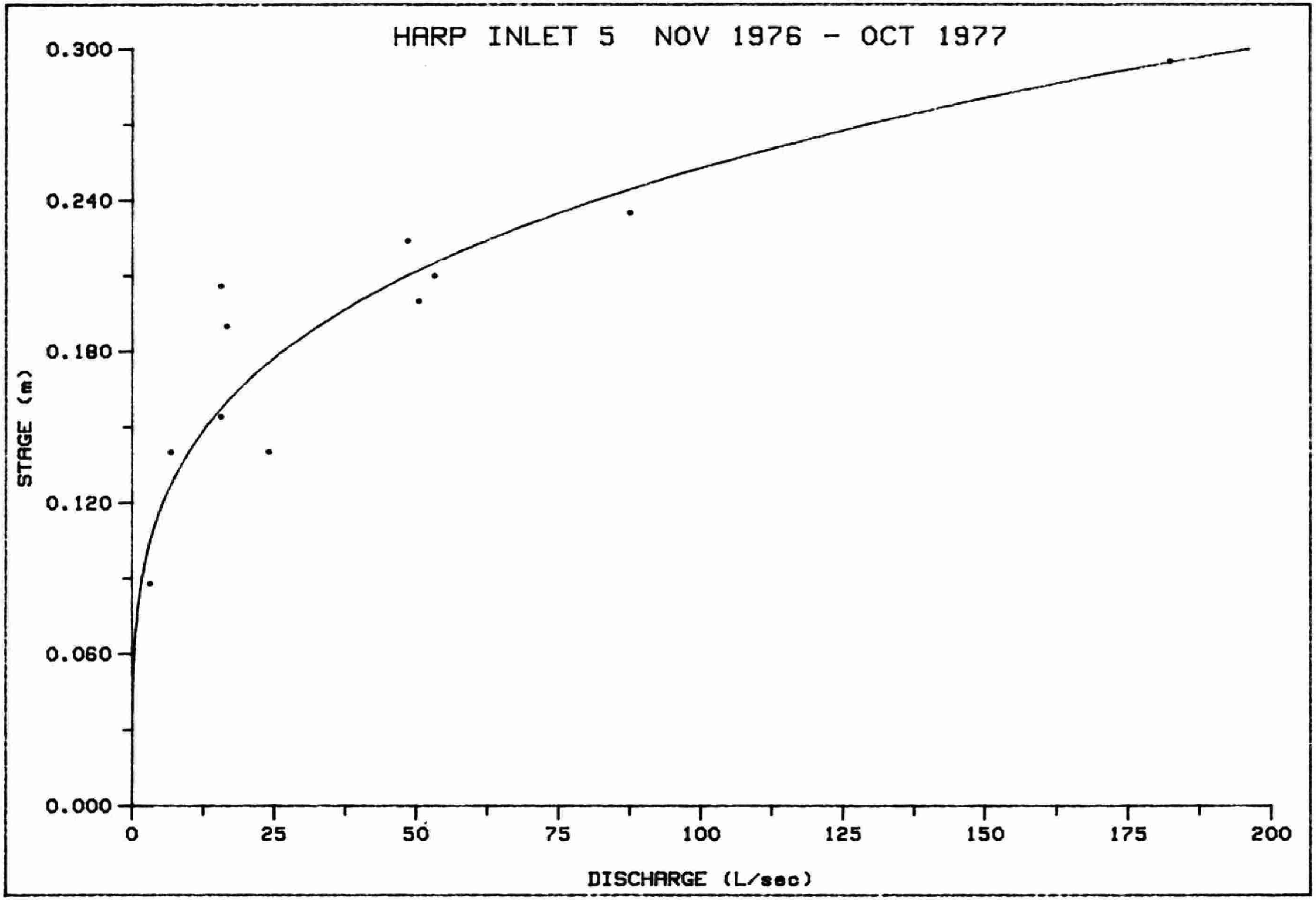

HARP INLET 5 NOV 1976 - OCT 1977
0.300
0.240
0.180
0.120
0.060
0.000
STAGE (m)
0
25
50
75
100
125
150
175
200
DISCHARGE (L/sec)

FIGURE 35

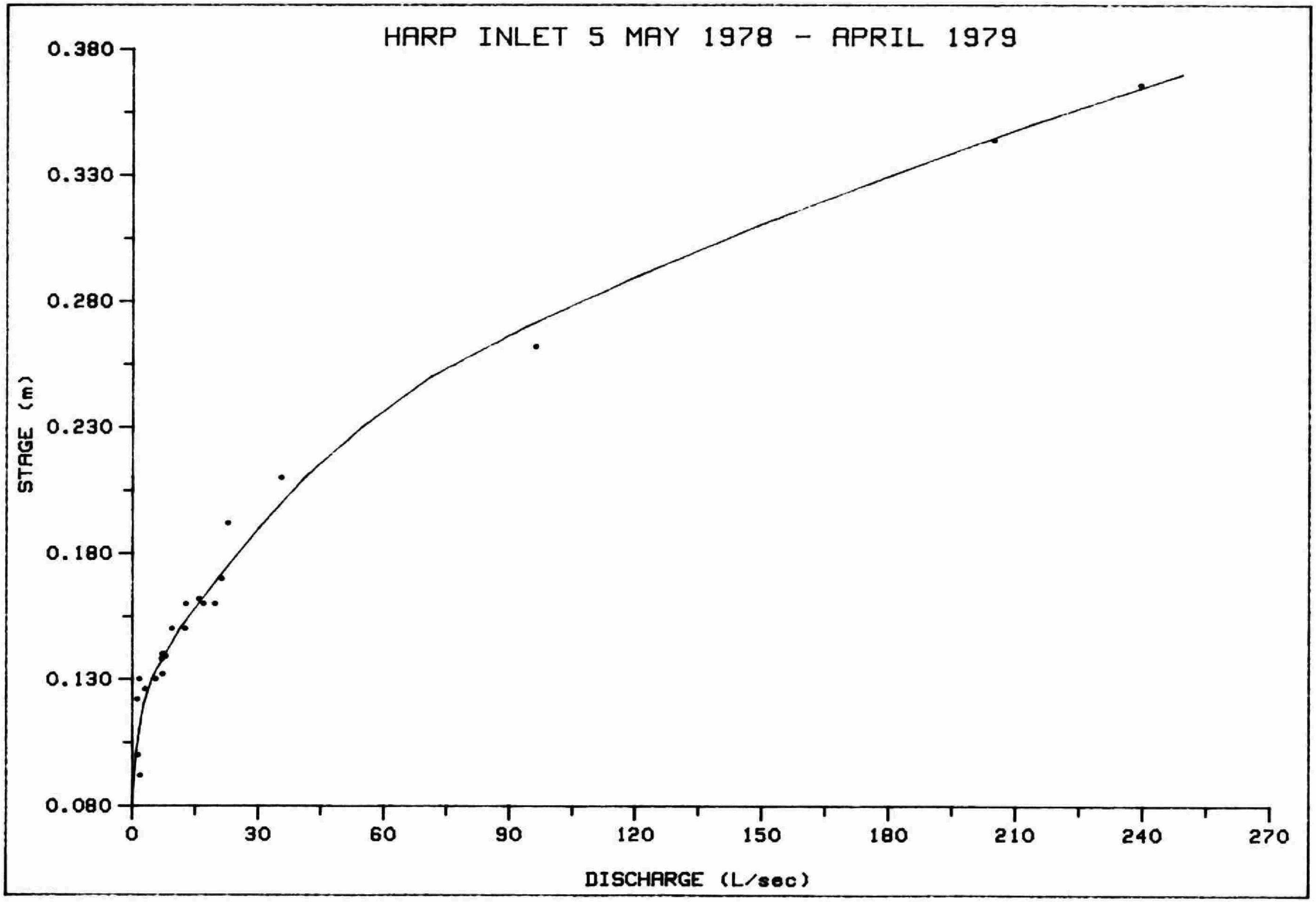

HARP INLET 5 MAY 1978 - APRIL 1979
STAGE (m)
0.380
0.330
0.280
0.230
0.180
0.130
0.080
0
30
60
90
120
150
180
210
240
270
DISCHARGE (L/sec)

FIGURE 36

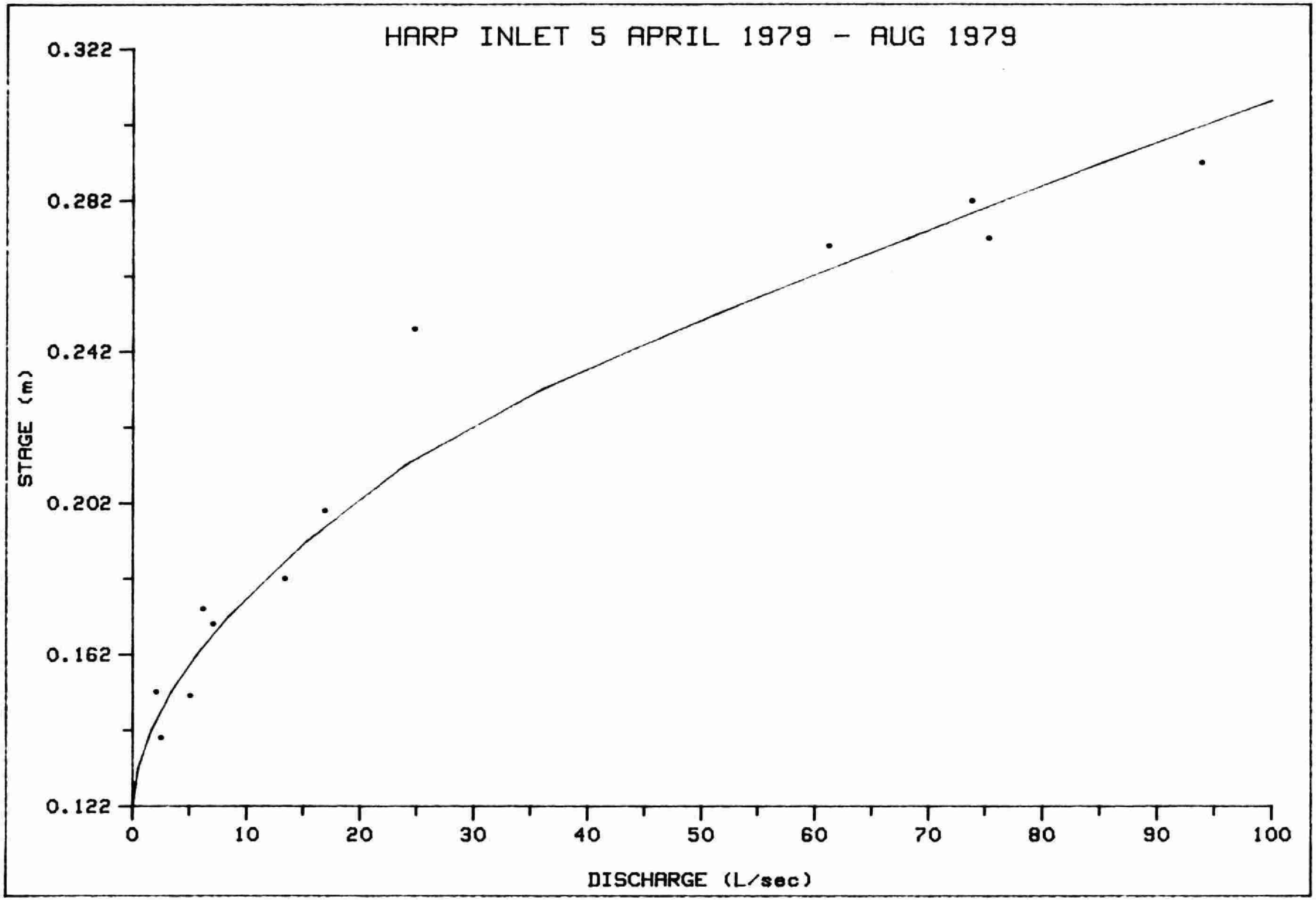
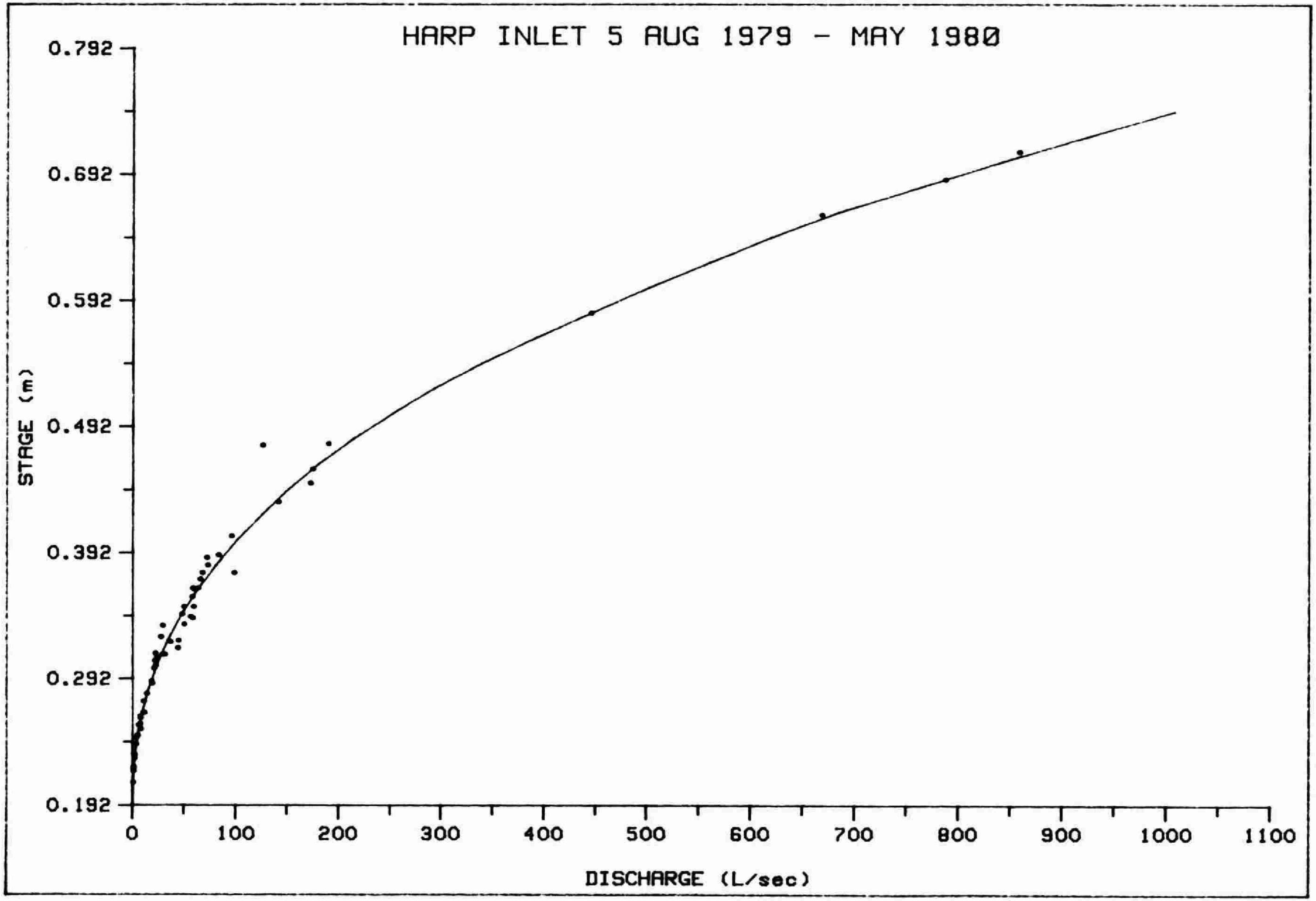

HARP INLET 5 APRIL 1979 - AUG 1979
STAGE (m)
0.322
0.282
0.242
0.202
0.162
0.122
DISCHARGE (L/sec)
0
10
20
30
40
50
60
70
80
90
100

FIGURE 37



HARP INLET 5 AUG 1979 - MAY 1980
0.792
0.692
0.592
0.492
0.392
0.292
0.192
STAGE (m)
0
100
200
300
400
500
600
700
800
900
1000
1100
DISCHARGE (L/sec)

FIGURE 38

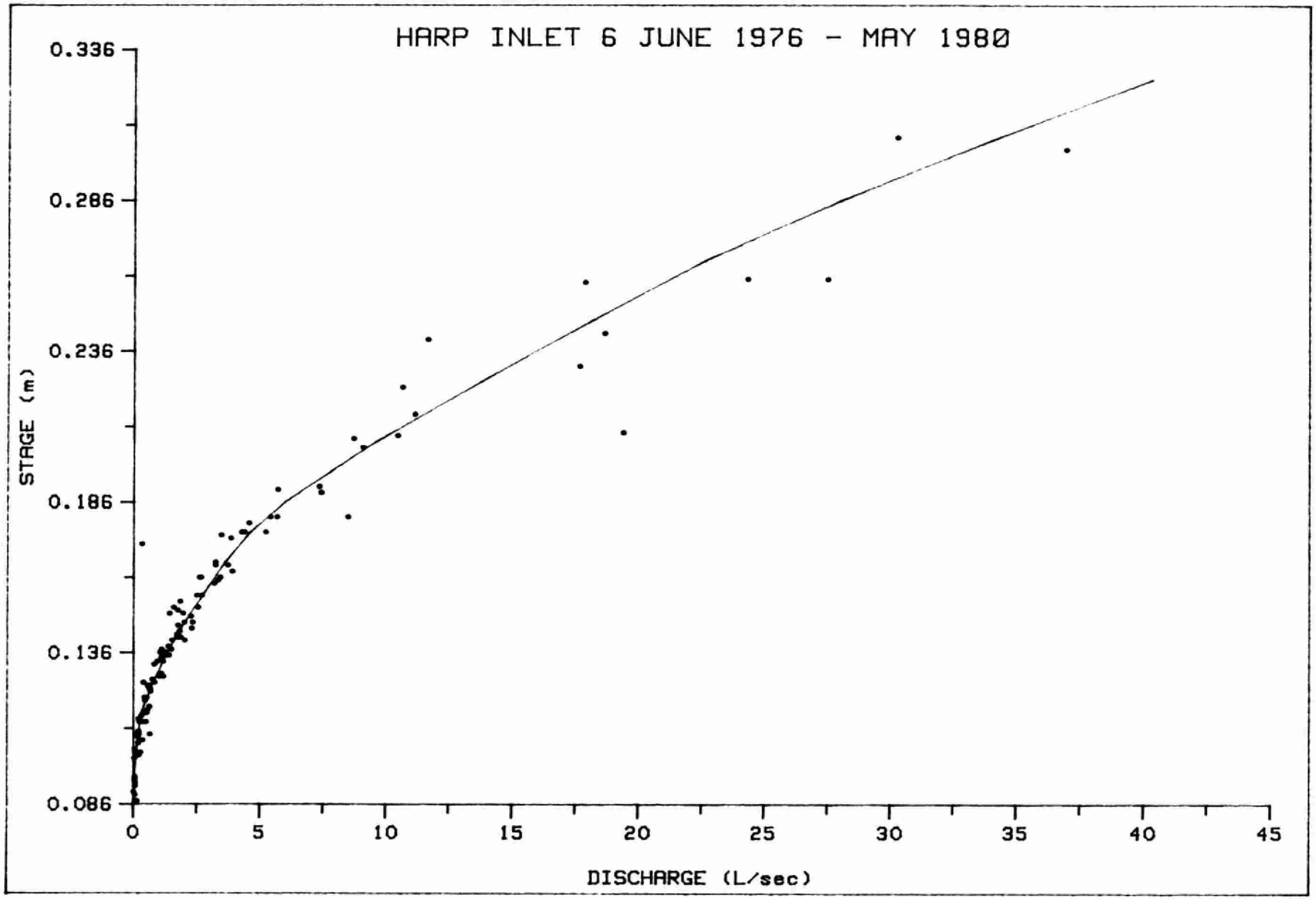

HARP INLET 6 JUNE 1976 - MAY 1980
STAGE (m)
0.336
0.286
0.236
0.186
0.136
0.086
0
5
10
15
20
25
30
35
40
45
DISCHARGE (L/sec)

FIGURE 39

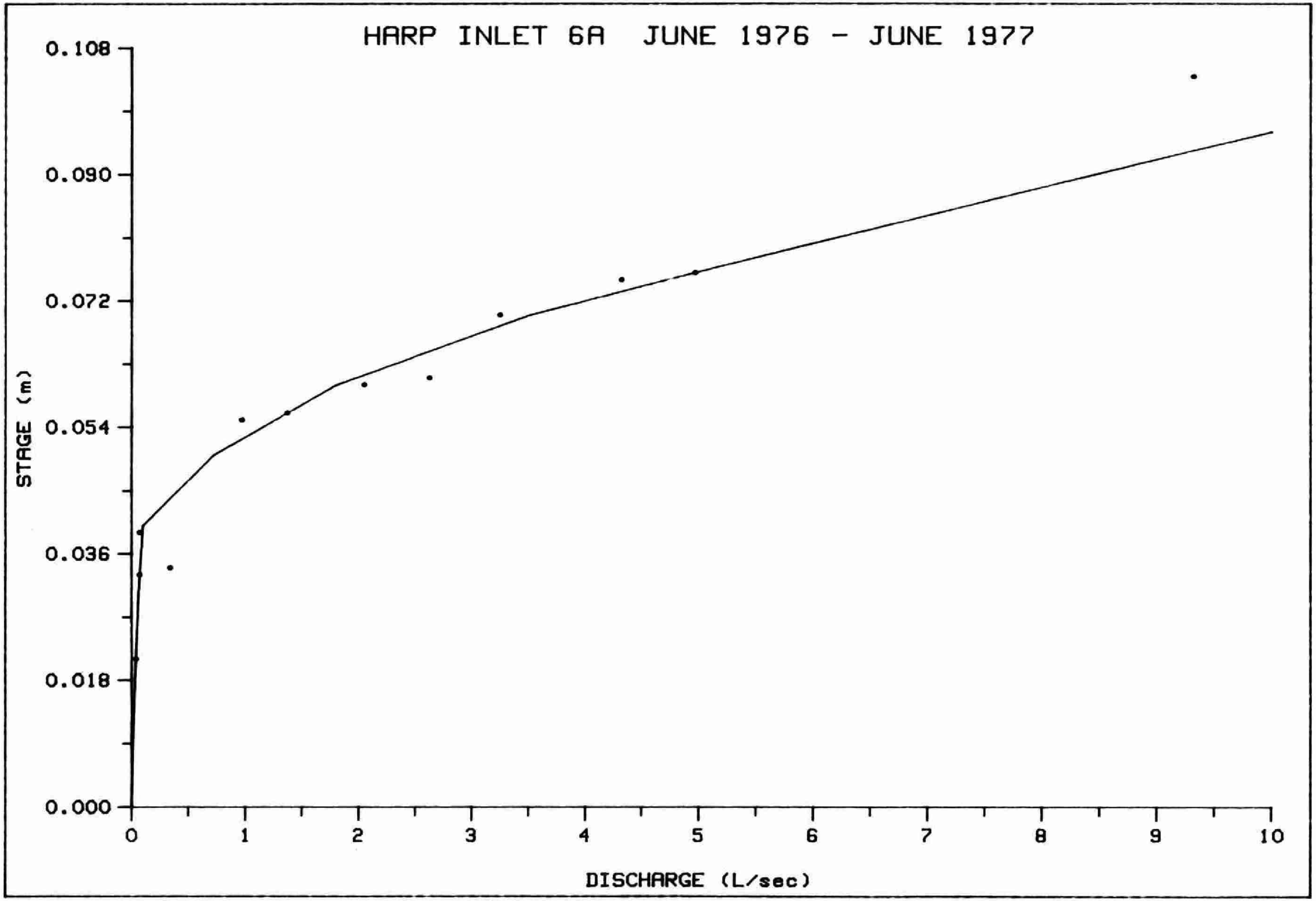

HARP INLET 6A JUNE 1976 - JUNE 1977
STAGE (m)
0.108
0.090
0.072
0.054
0.036
0.018
0.000
0
1
2
3
4
5
6
7
8
9
10
DISCHARGE (L/sec)

FIGURE 40

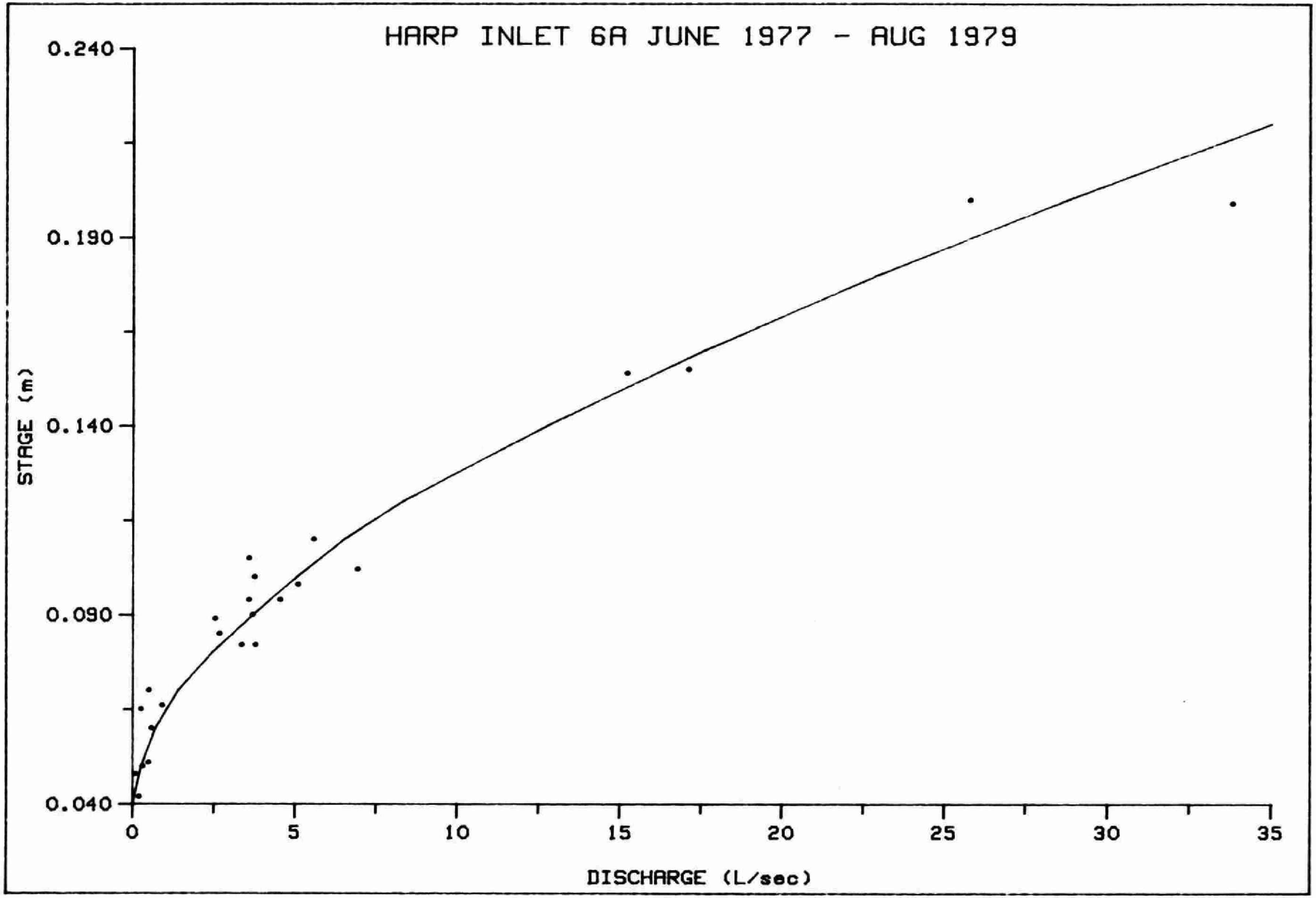

HARP INLET 6A JUNE 1977 - AUG 1979
STAGE (m)
0.240
0.190
0.140
0.090
0.040
0
5
10
15
20
25
30
35
DISCHARGE (L/sec)

FIGURE 41

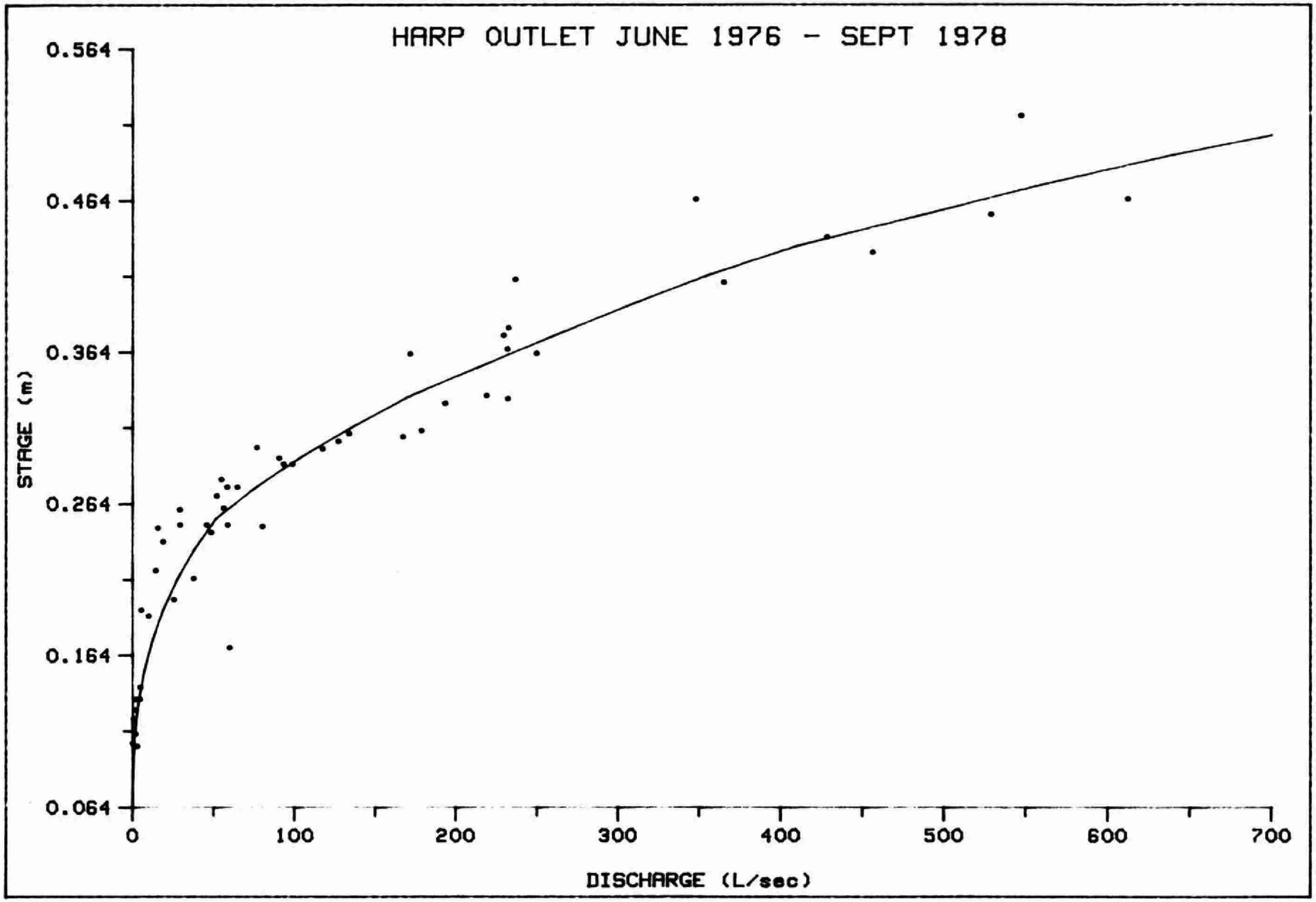
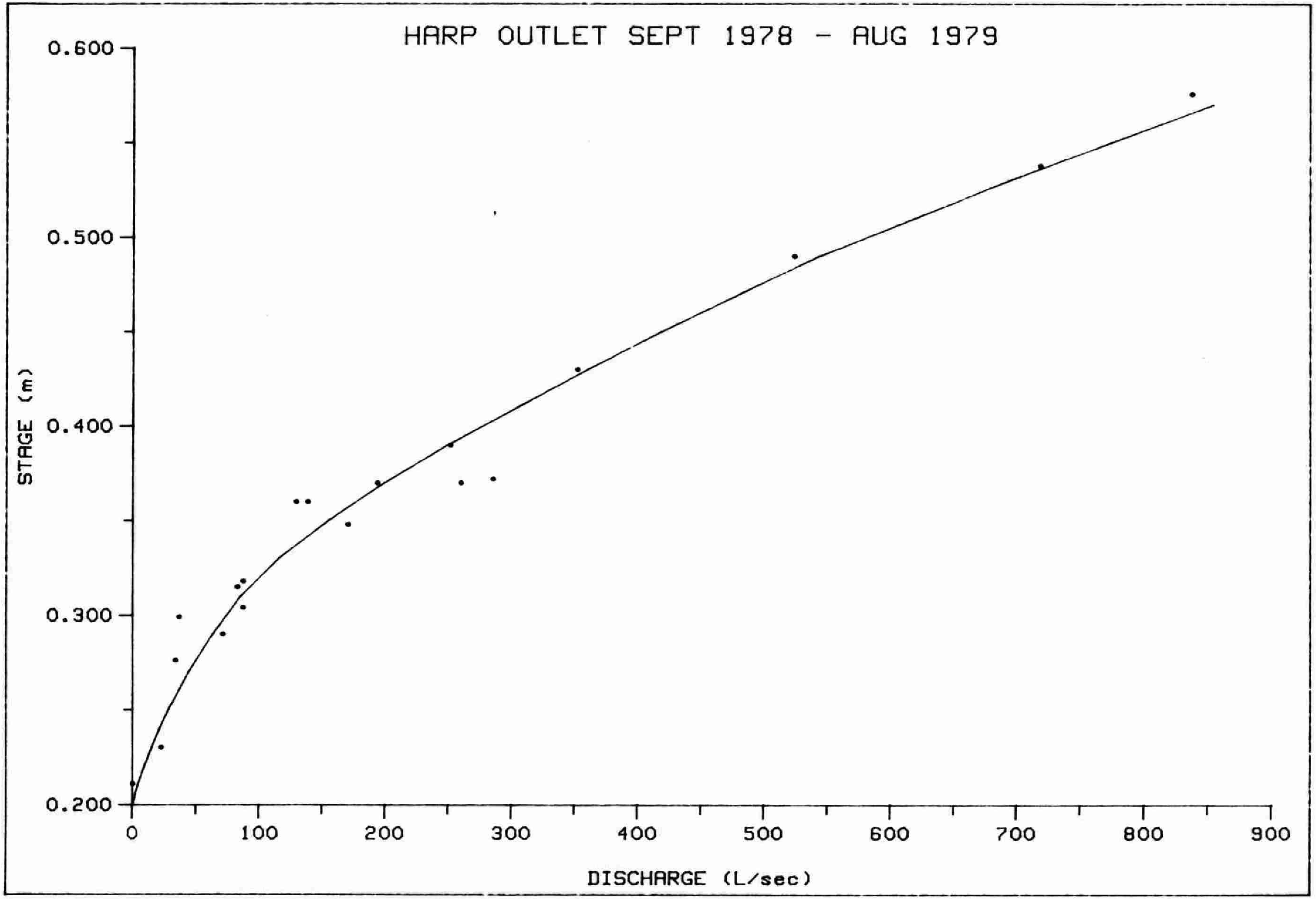

HARP OUTLET JUNE 1976 - SEPT 1978
0.564
0.464
0.364
0.264
0.164
0.064
STAGE (m)
0
100
200
300
400
500
600
700
DISCHARGE (L/sec)

FIGURE 42



HARP OUTLET SEPT 1978 - AUG 1979
STAGE (m)
0.600
0.500
0.400
0.300
0.200
0
100
200
300
400
500
600
700
800
900
DISCHARGE (L/sec)

FIGURE 43

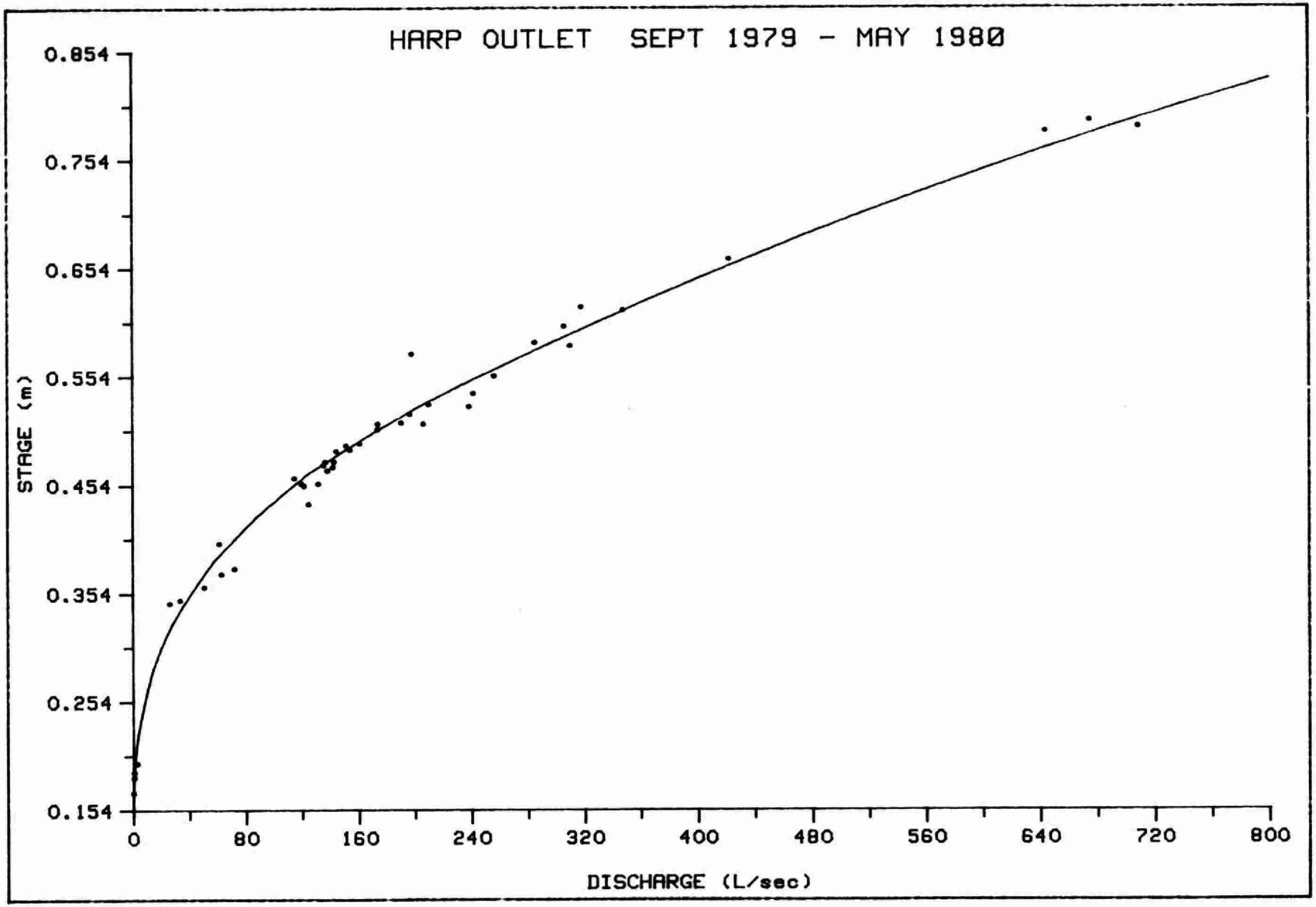
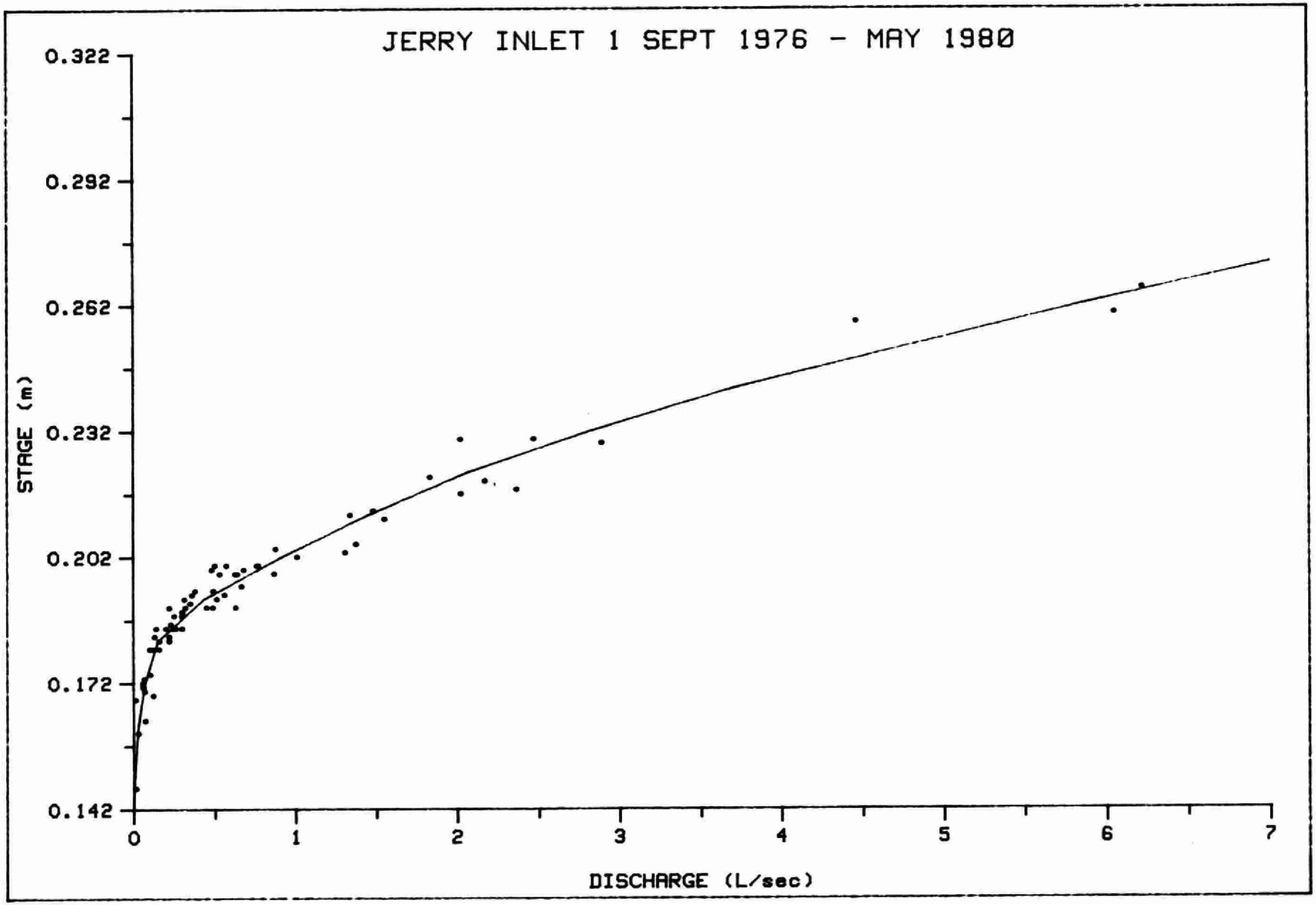
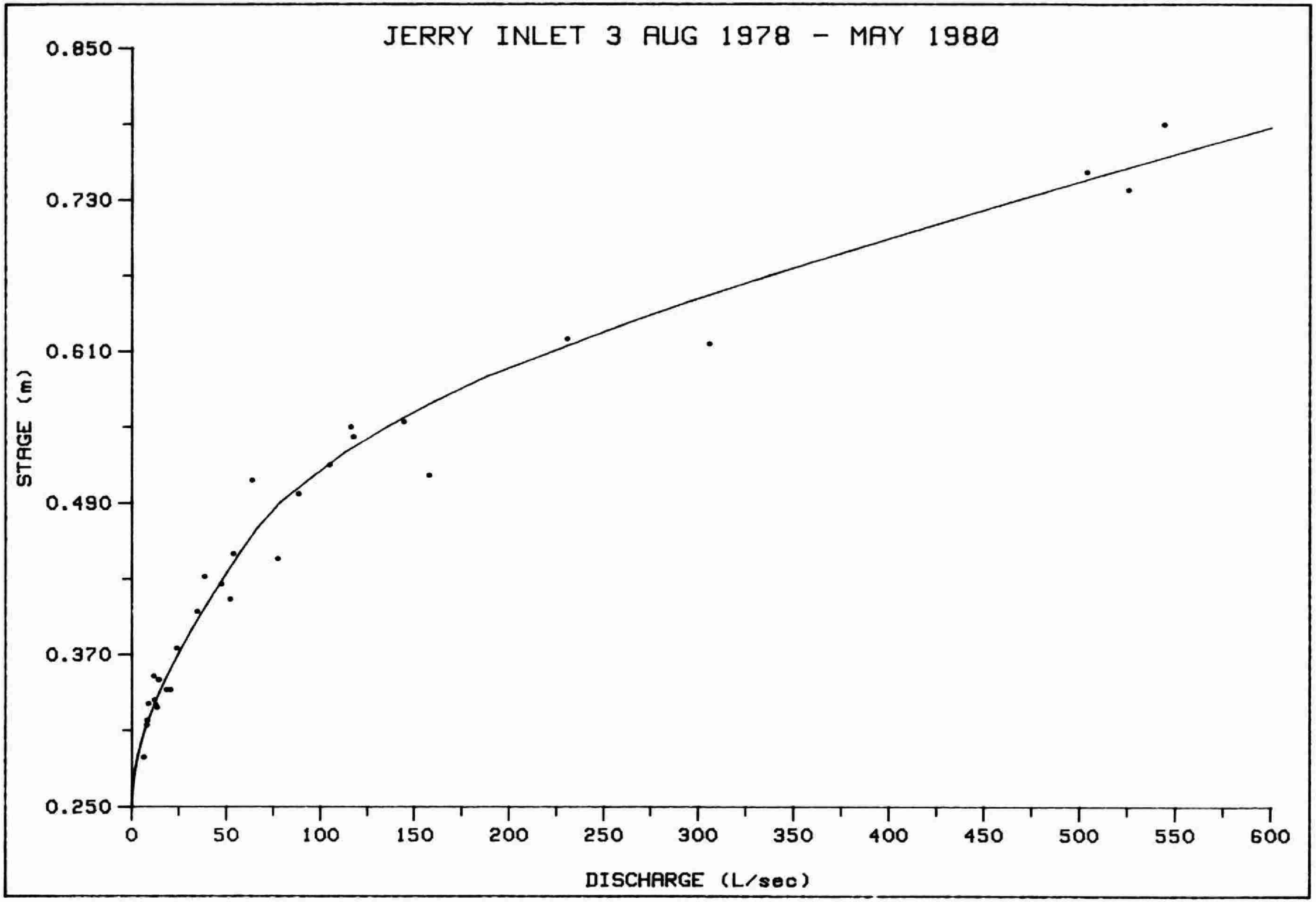

HARP OUTLET SEPT 1979 - MAY 1980
STAGE (m)
0.854
0.754
0.654
0.554
0.454
0.354
0.254
0.154
0
80
160
240
320
400
480
560
640
720
800
DISCHARGE (L/sec)

FIGURE 44



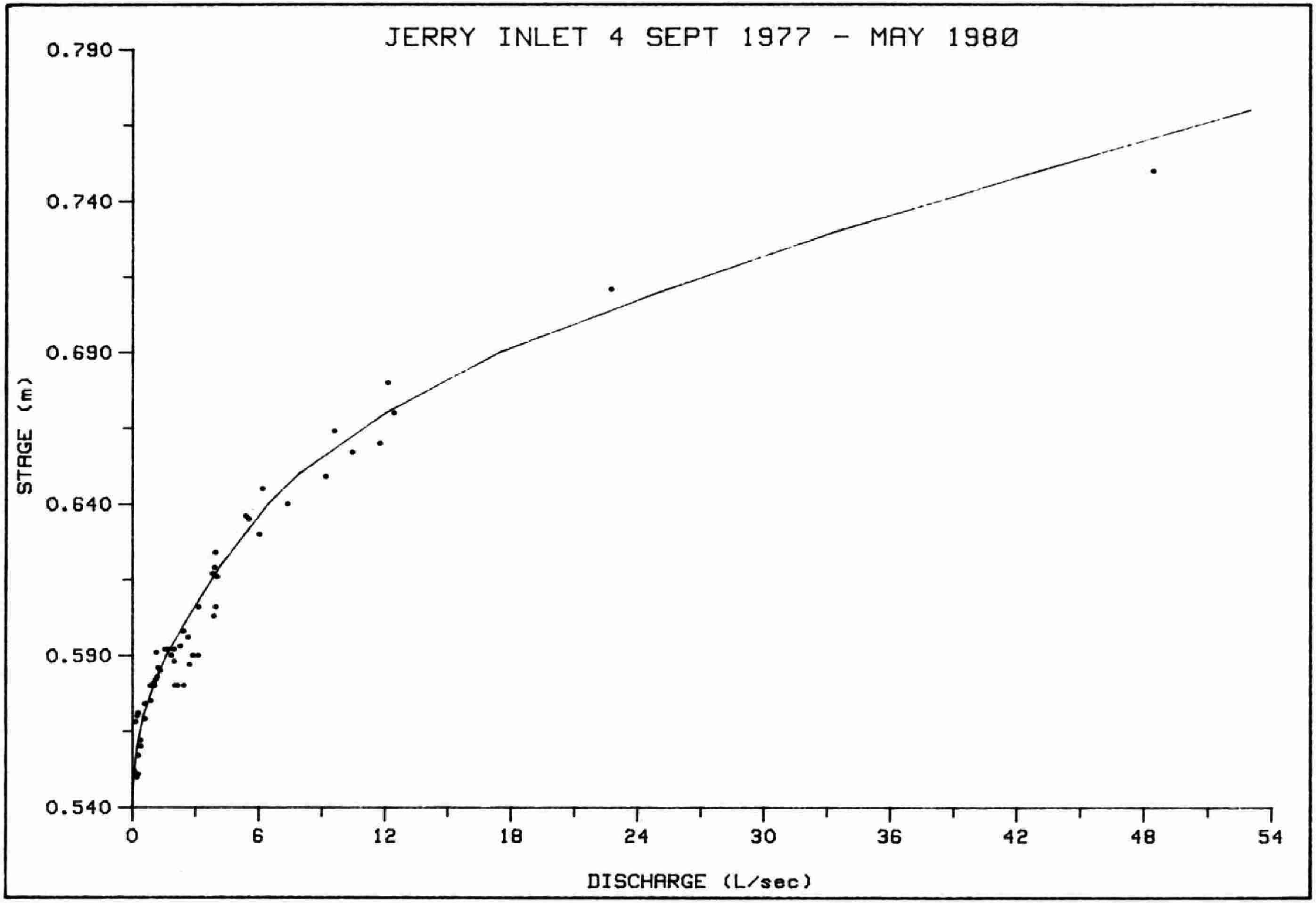
JERRY INLET 1 SEPT 1976 - MAY 1980
0.322
0.292
0.262
0.232
0.202
0.172
0.142
STAGE (m)
0
1
2
3
4
5
6
7
DISCHARGE (L/sec)

FIGURE 45



JERRY INLET 3 AUG 1978 - MAY 1980
0.850
0.730
0.610
0.490
0.370
0.250
STAGE (m)
0
50
100
150
200
250
300
350
400
450
500
550
600
DISCHARGE (L/sec)

FIGURE 46



JERRY INLET 4 SEPT 1977 - MAY 1980
0.790
0.740
0.690
0.640
0.590
0.540
STAGE (m)
0
6
12
18
24
30
36
42
48
54
DISCHARGE (L/sec)

FIGURE 47

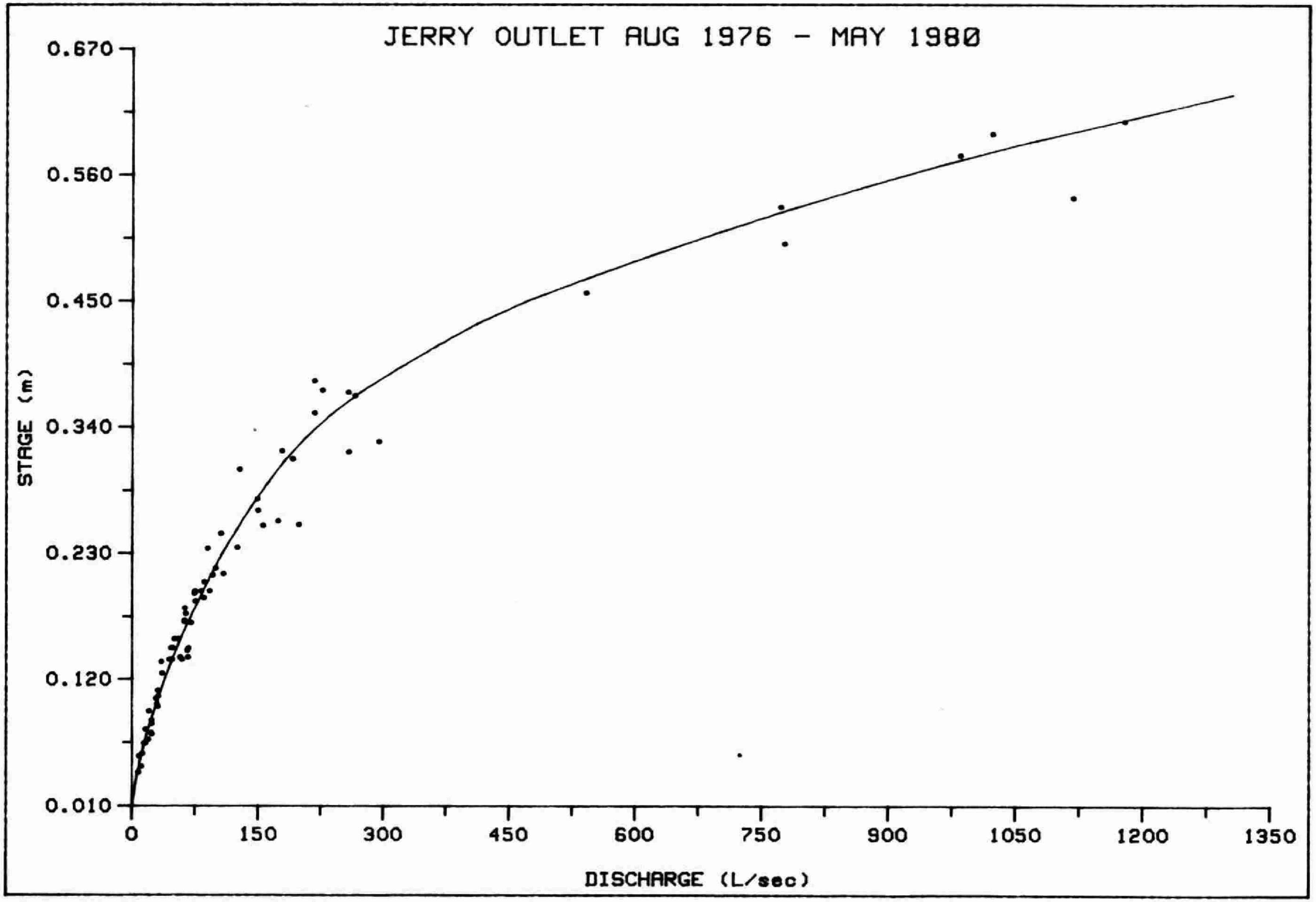

JERRY OUTLET AUG 1976 - MAY 1980
STAGE (m)
0.670
0.560
0.450
0.340
0.230
0.120
0.010
0
150
300
450
600
750
900
1050
1200
1350
DISCHARGE (L/sec)

FIGURE 48

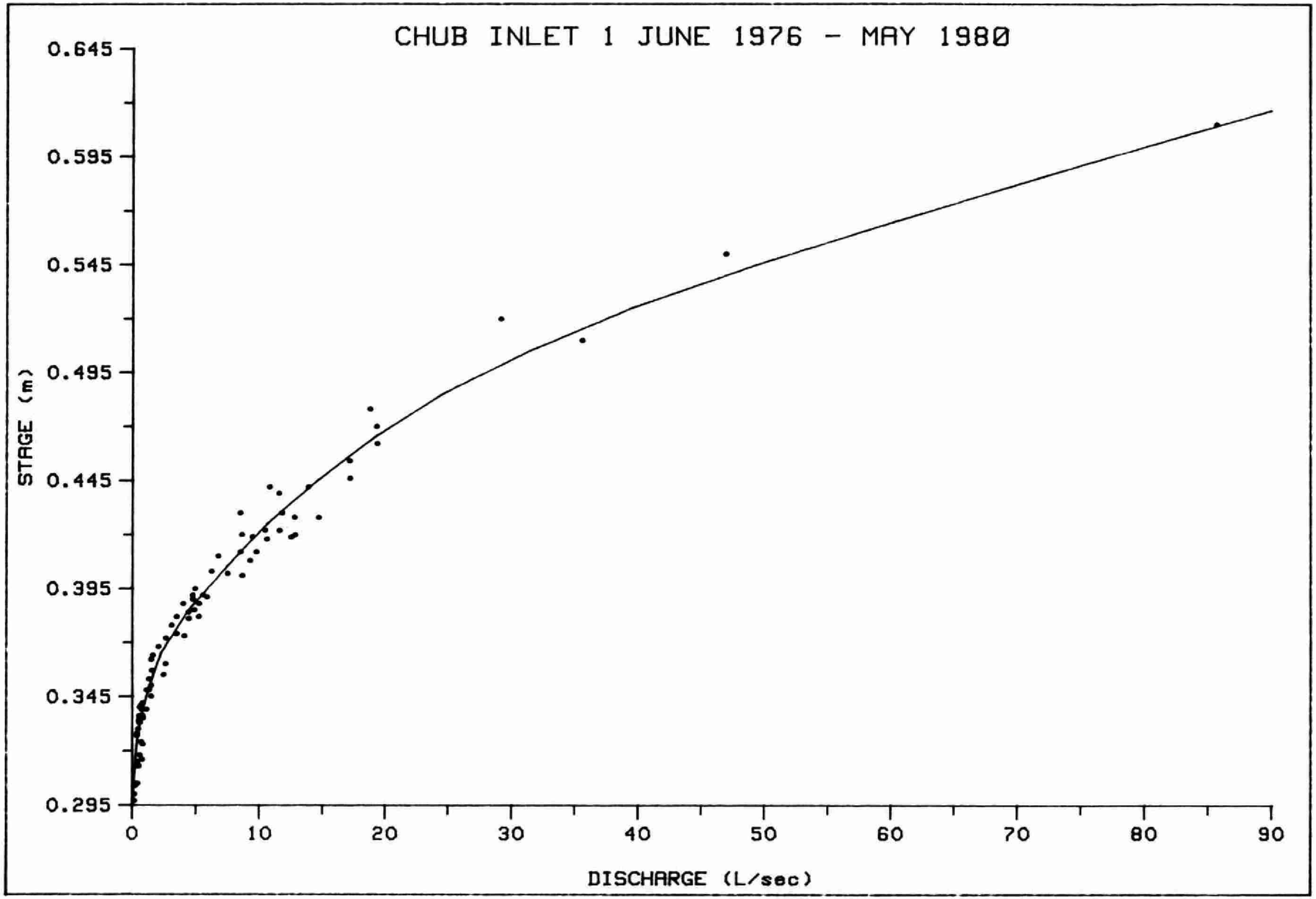
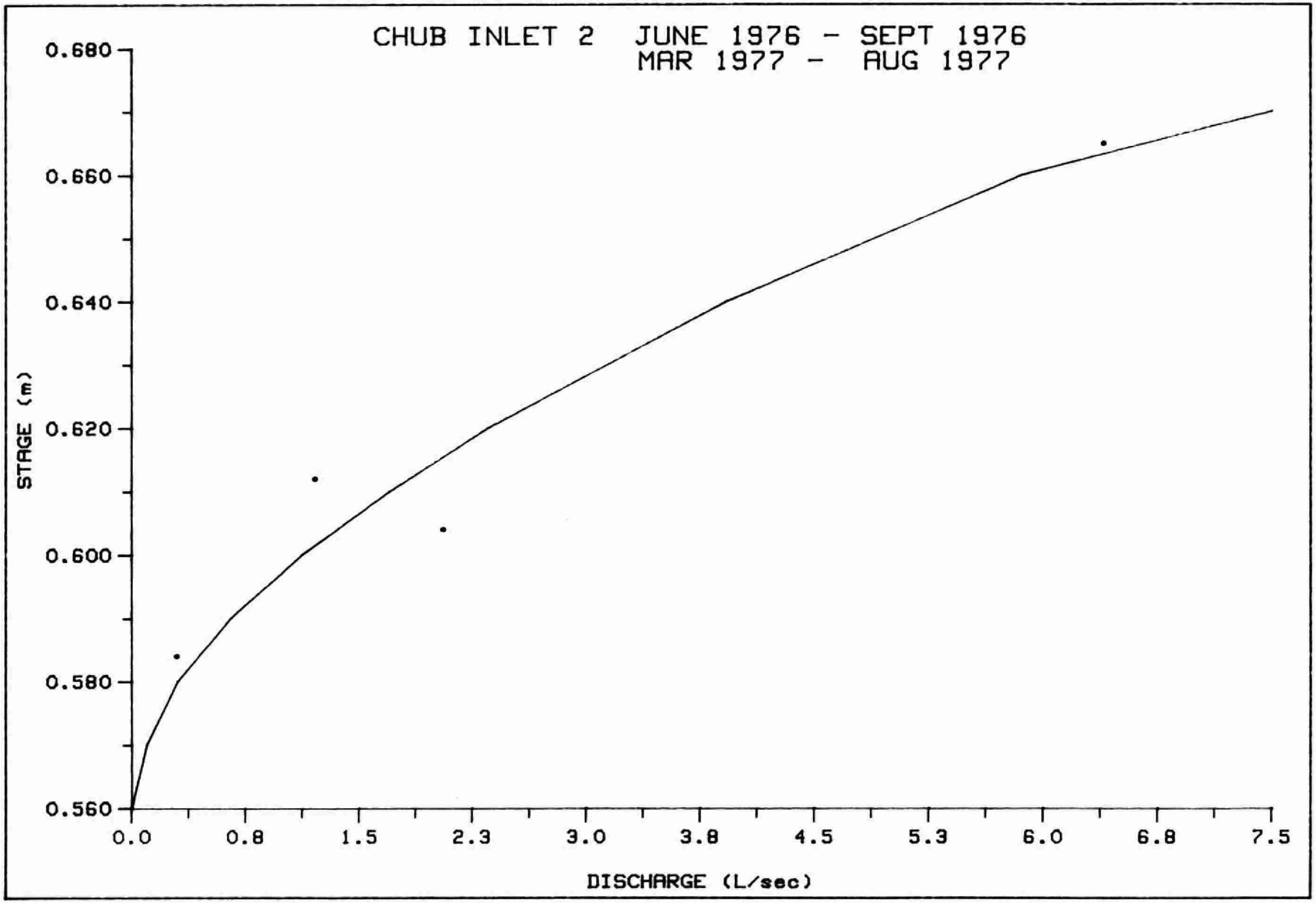

CHUB INLET 1 JUNE 1976 - MAY 1980
STAGE (m)
0.645
0.595
0.545
0.495
0.445
0.395
0.345
0.295
0
10
20
30
40
50
60
70
80
90
DISCHARGE (L/sec)

FIGURE 49



CHUB INLET 2 JUNE 1976 - SEPT 1976
MAR 1977 - AUG 1977
STAGE (m)
0.680
0.660
0.640
0.620
0.600
0.580
0.560
0.0
0.8
1.5
2.3
3.0
3.8
4.5
5.3
6.0
6.8
7.5
DISCHARGE (L/sec)

FIGURE 50

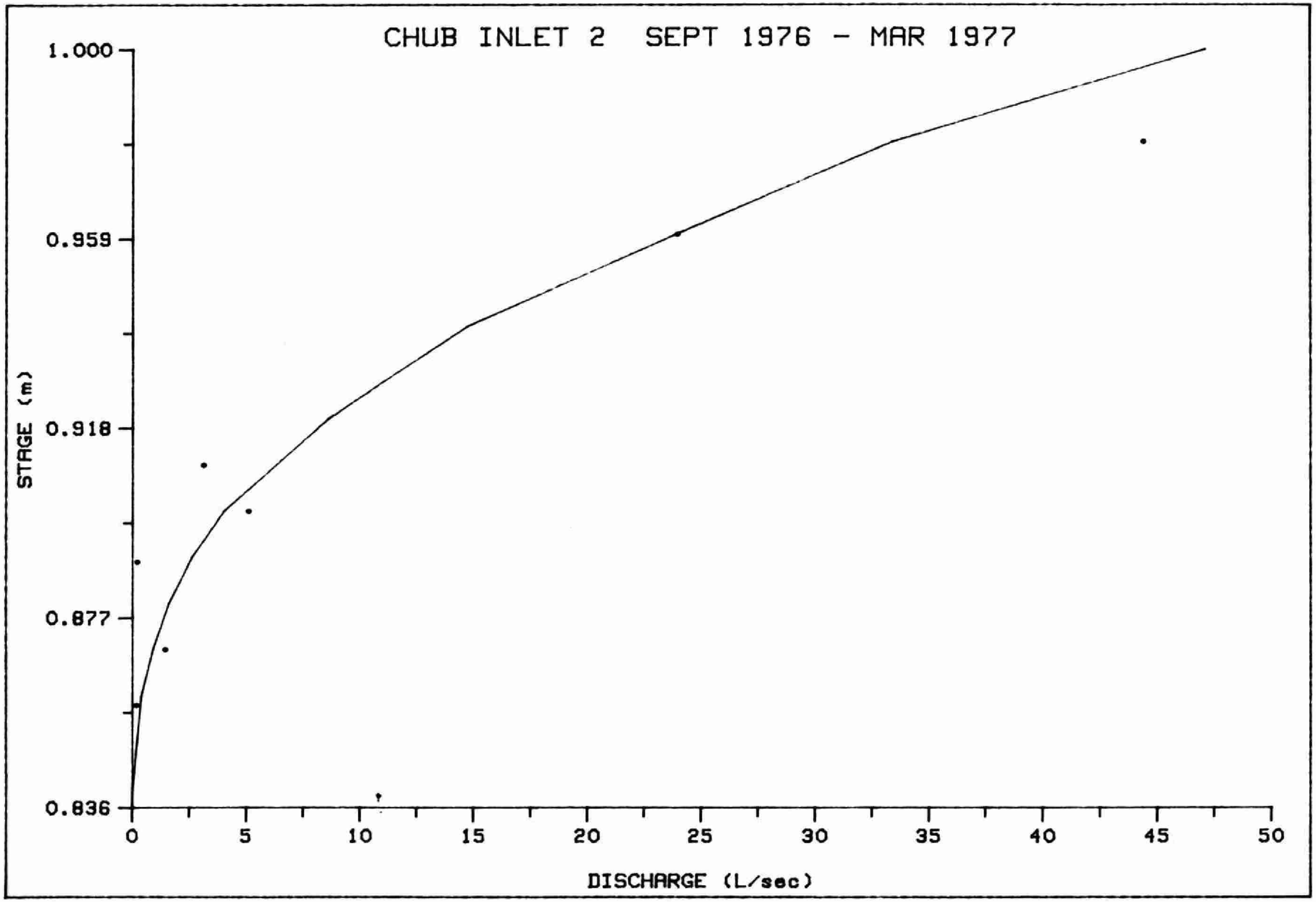

CHUB INLET 2 SEPT 1976 - MAR 1977
1.000
0.959
0.918
0.877
0.836
STAGE (m)
0
5
10
15
20
25
30
35
40
45
50
DISCHARGE (L/sec)

FIGURE 51

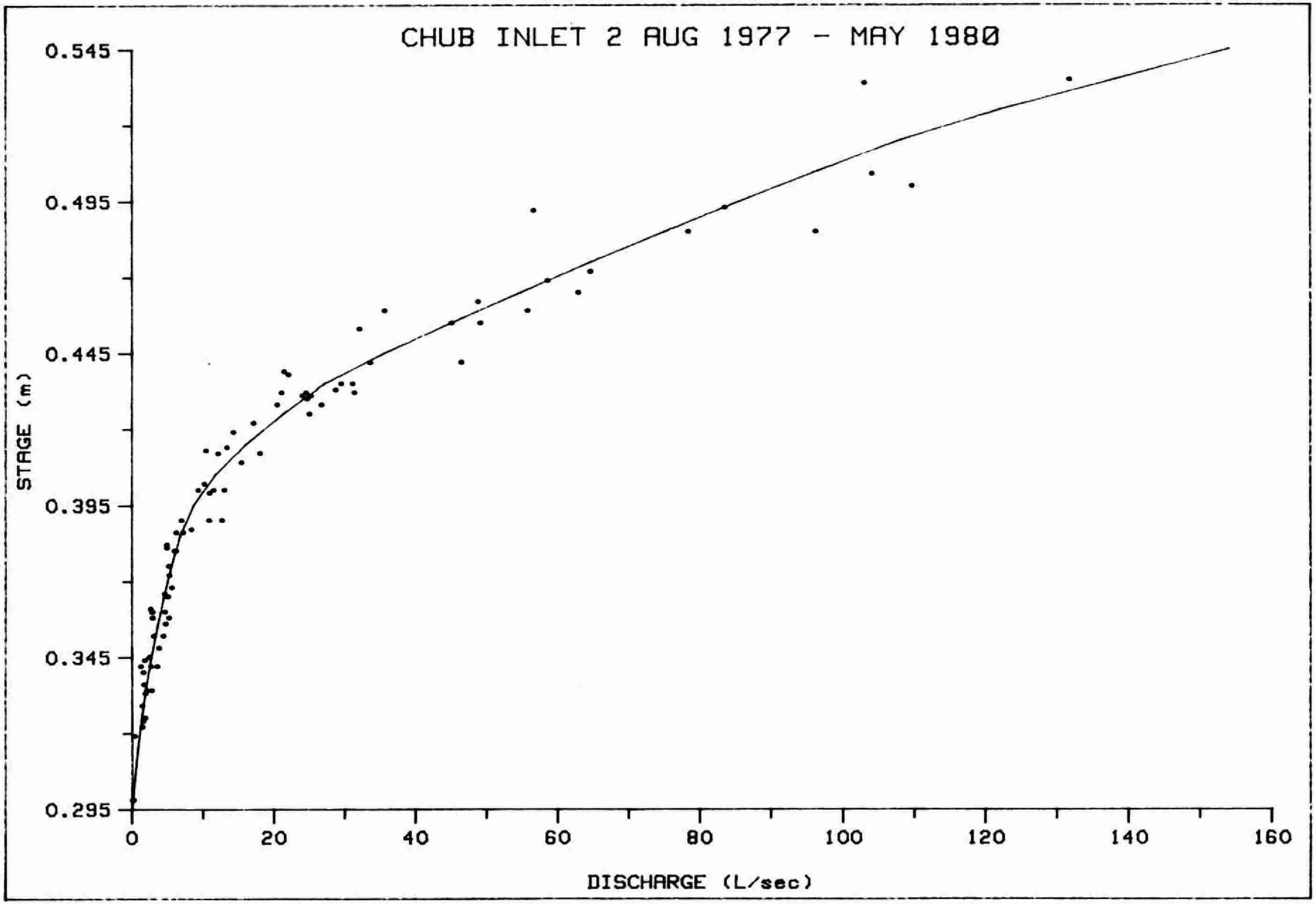

CHUB INLET 2 AUG 1977 - MAY 1980
STAGE (m)
0.545
0.495
0.445
0.395
0.345
0.295
0
20
40
60
80
100
120
140
160
DISCHARGE (L/sec)

FIGURE 52

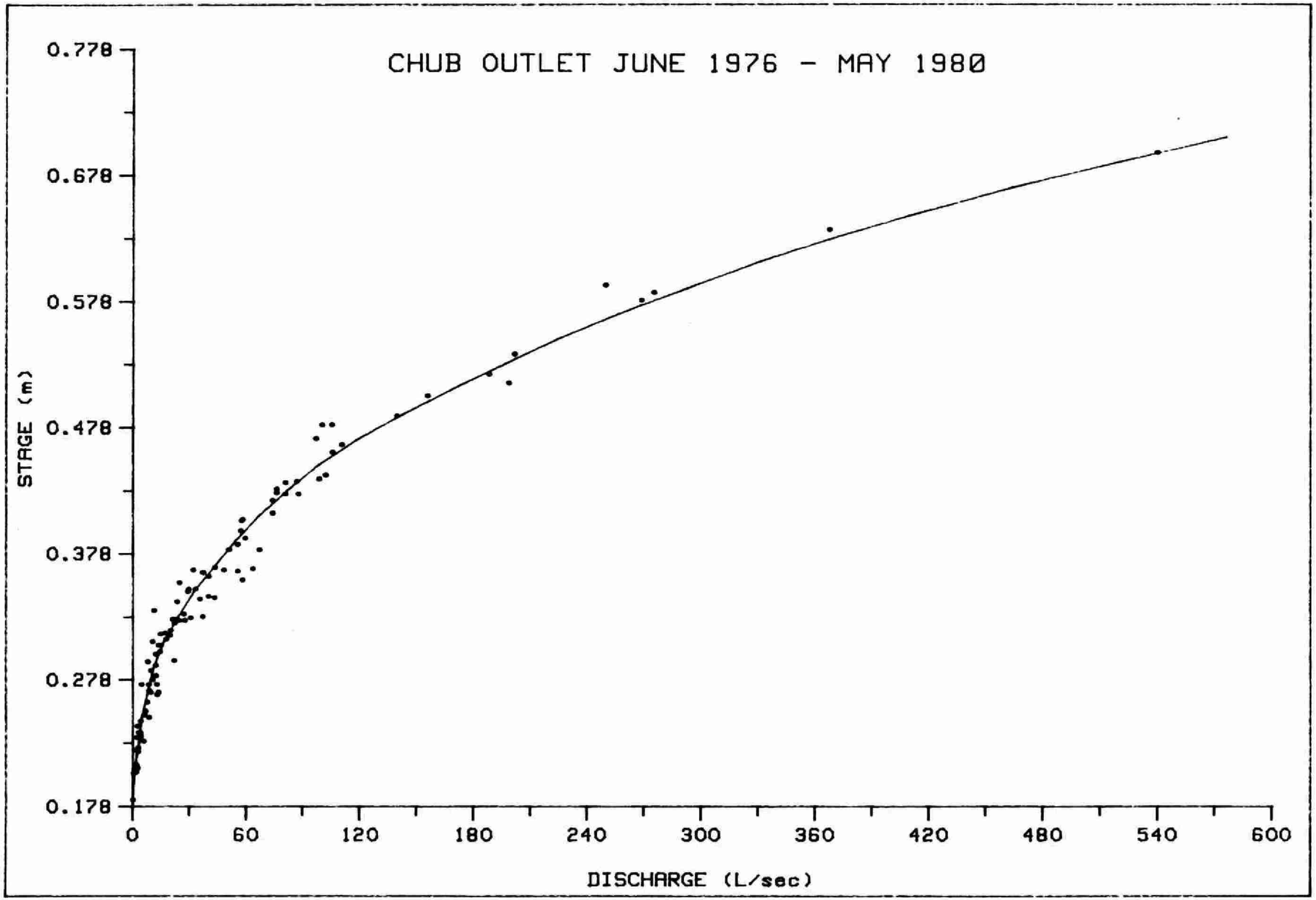

CHUB OUTLET JUNE 1976 - MAY 1980
STAGE (m)
0.778
0.678
0.578
0.478
0.378
0.278
0.178
0
60
120
180
240
300
360
420
480
540
600
DISCHARGE (L/sec)

FIGURE 53

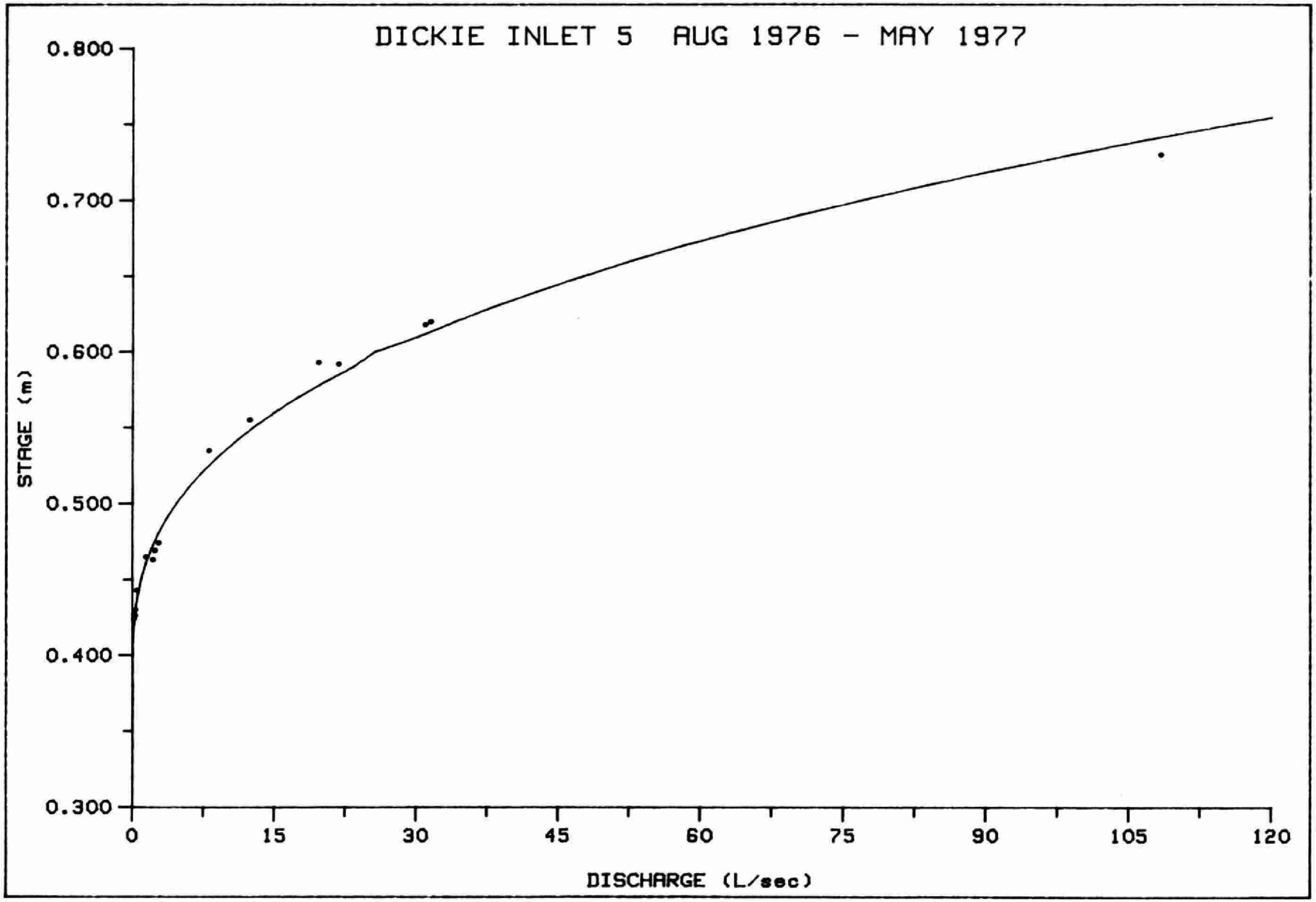

DICKIE INLET 5 AUG 1976 - MAY 1977
0.800
0.700
0.600
0.500
0.400
0.300
STAGE (m)
0
15
30
45
60
75
90
105
120
DISCHARGE (L/sec)

FIGURE 54

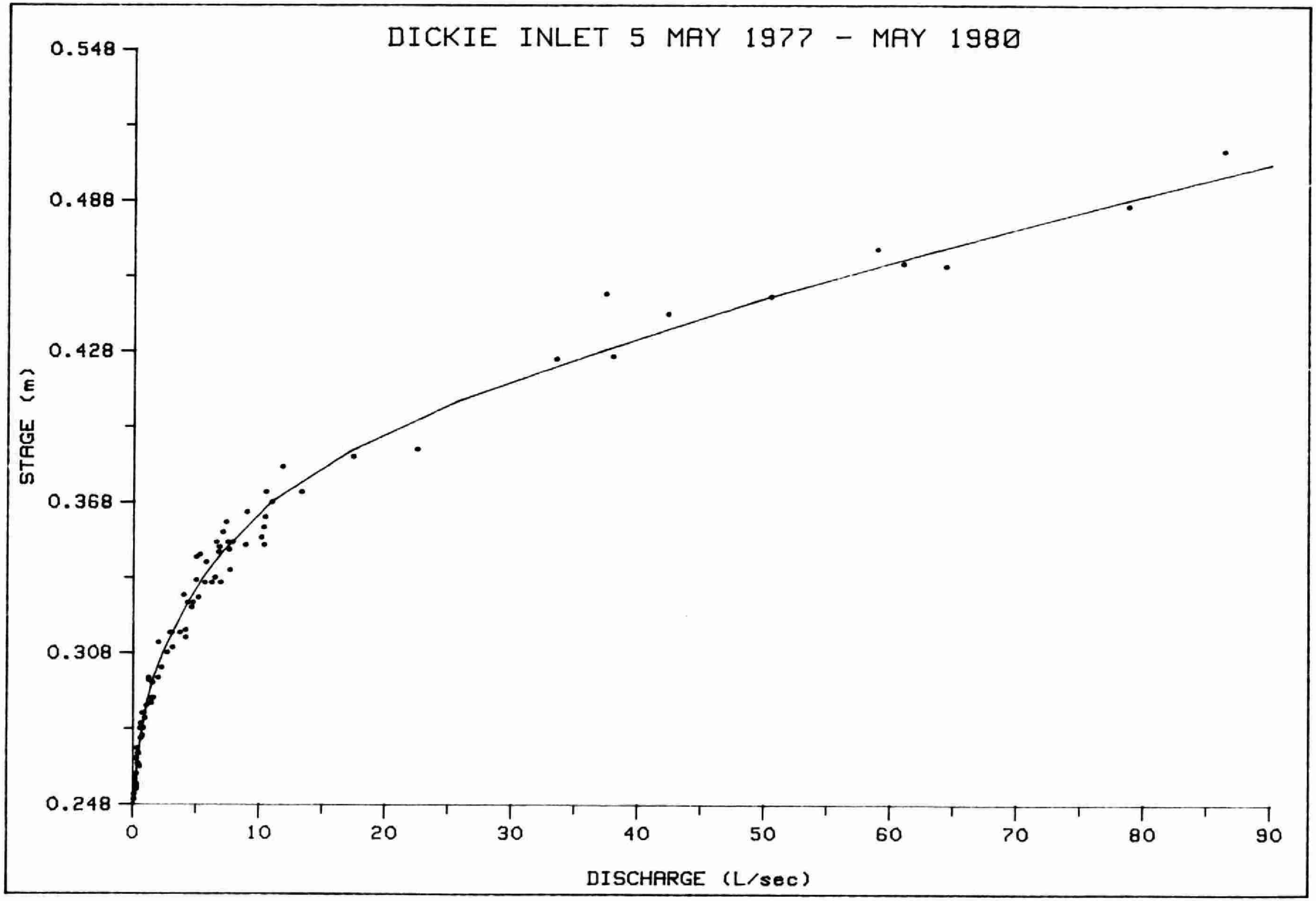

DICKIE INLET 5 MAY 1977 - MAY 1980
STAGE (m)
0.548
0.488
0.428
0.368
0.308
0.248
0
10
20
30
40
50
60
70
80
90
DISCHARGE (L/sec)

FIGURE 55

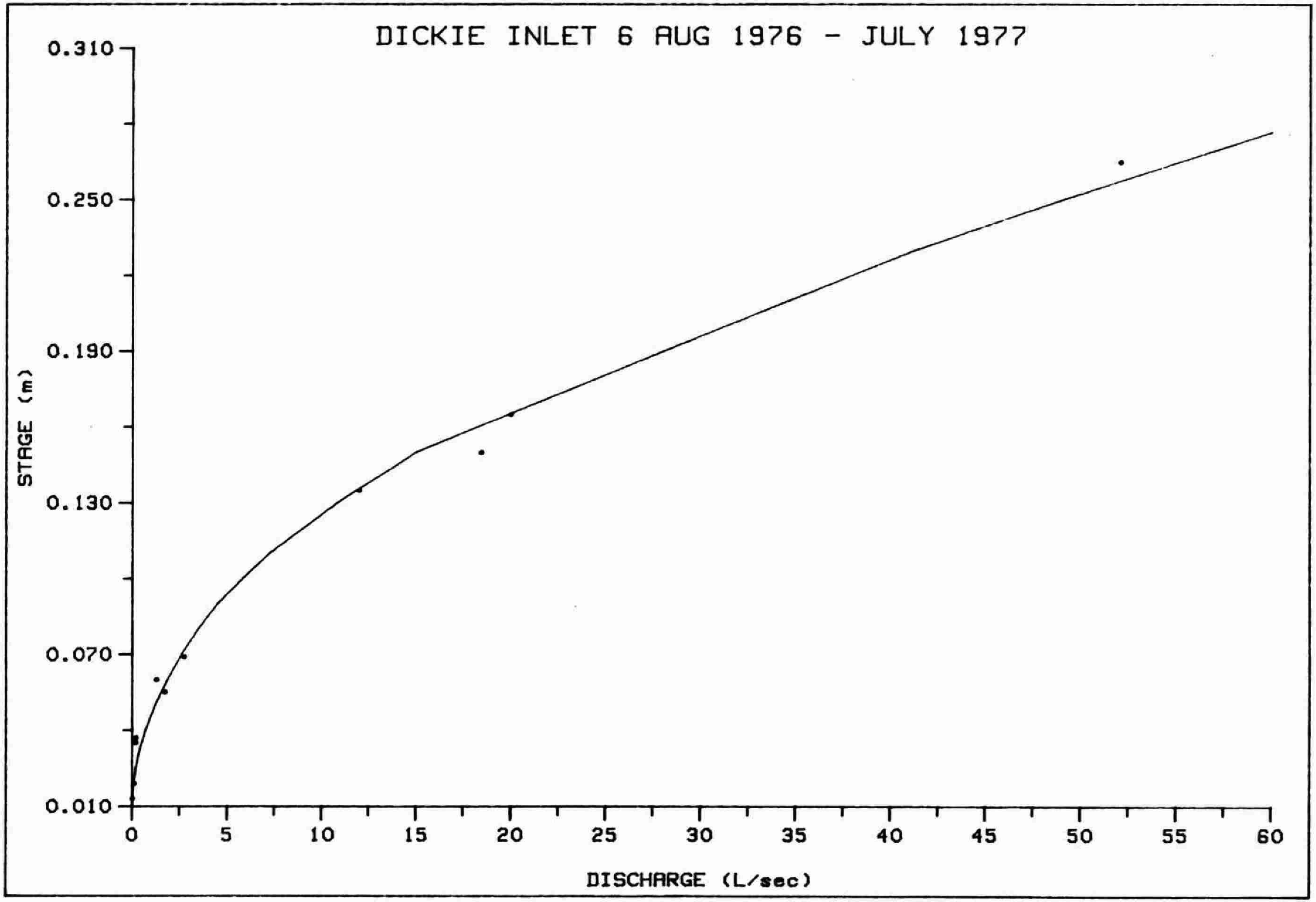

DICKIE INLET 6 AUG 1976 - JULY 1977
STAGE (m)
0.310
0.250
0.190
0.130
0.070
0.010
0
5
10
15
20
25
30
35
40
45
50
55
60
DISCHARGE (L/sec)

FIGURE 56

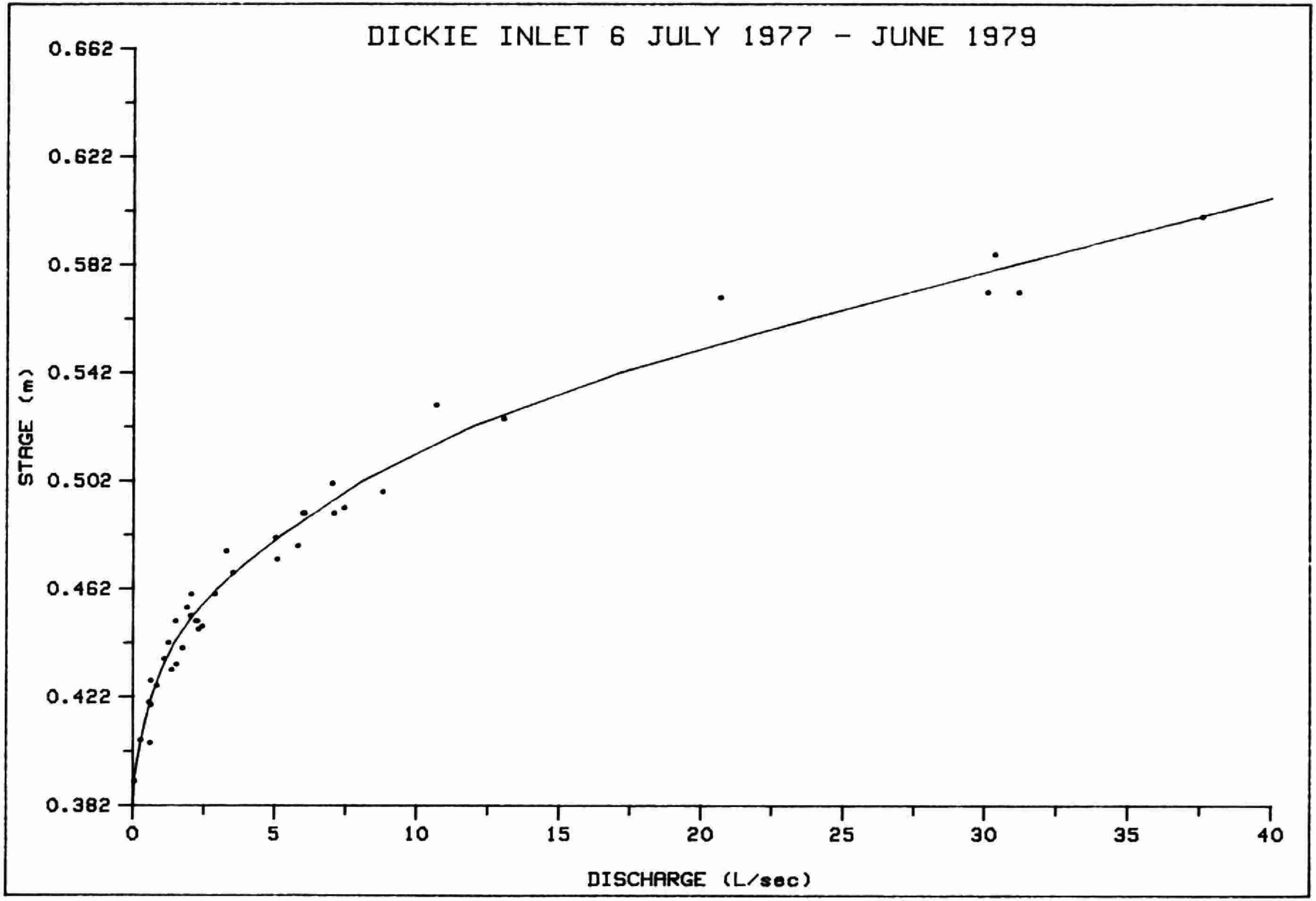

DICKIE INLET 6 JULY 1977 - JUNE 1979
STAGE (m)
0.662
0.622
0.582
0.542
0.502
0.462
0.422
0.382
0
5
10
15
20
25
30
35
40
DISCHARGE (L/sec)

FIGURE 57

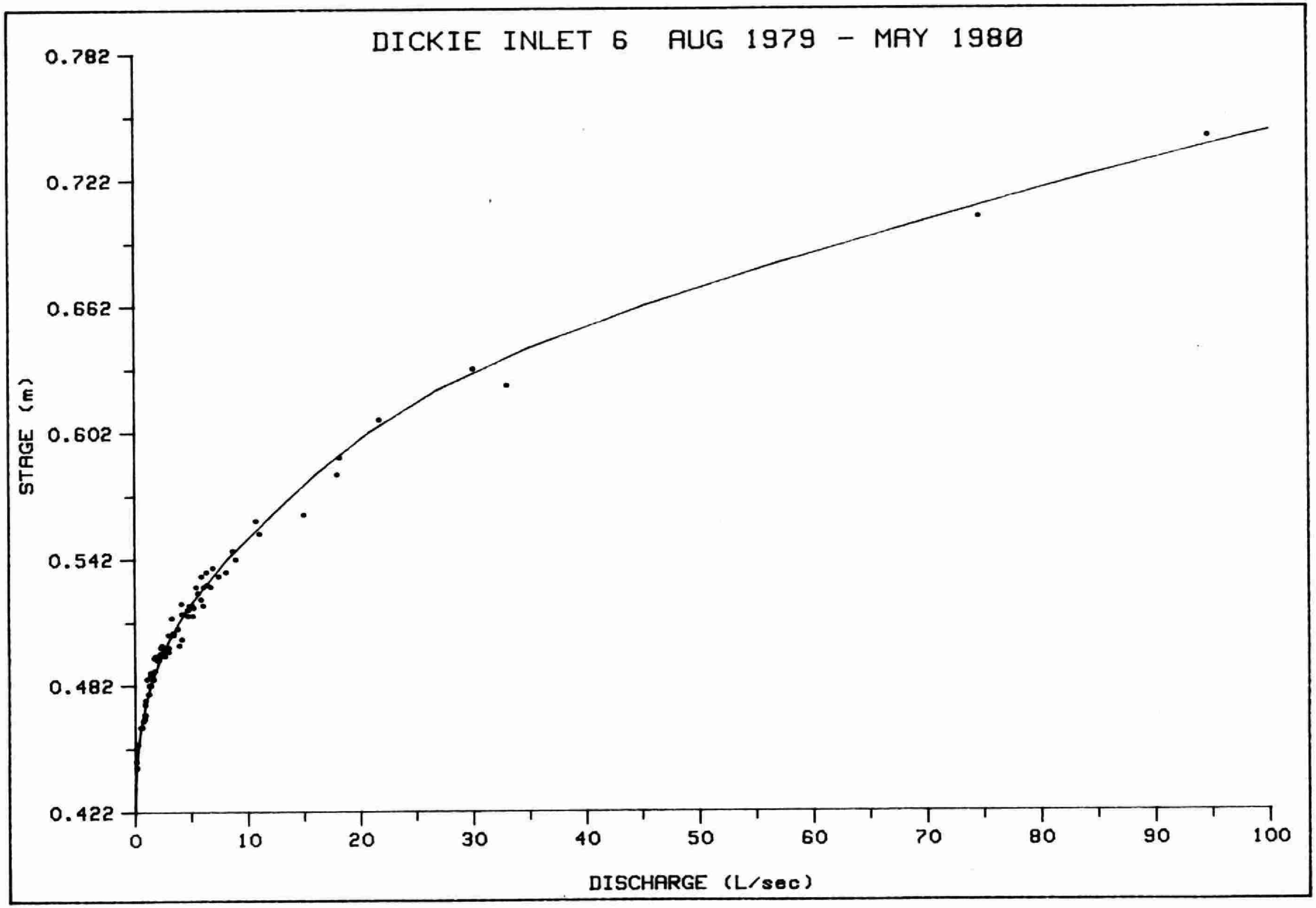

DICKIE INLET 6 AUG 1979 - MAY 1980
STAGE (m)
0.782
0.722
0.662
0.602
0.542
0.482
0.422
0
10
20
30
40
50
60
70
80
90
100
DISCHARGE (L/sec)

FIGURE 58

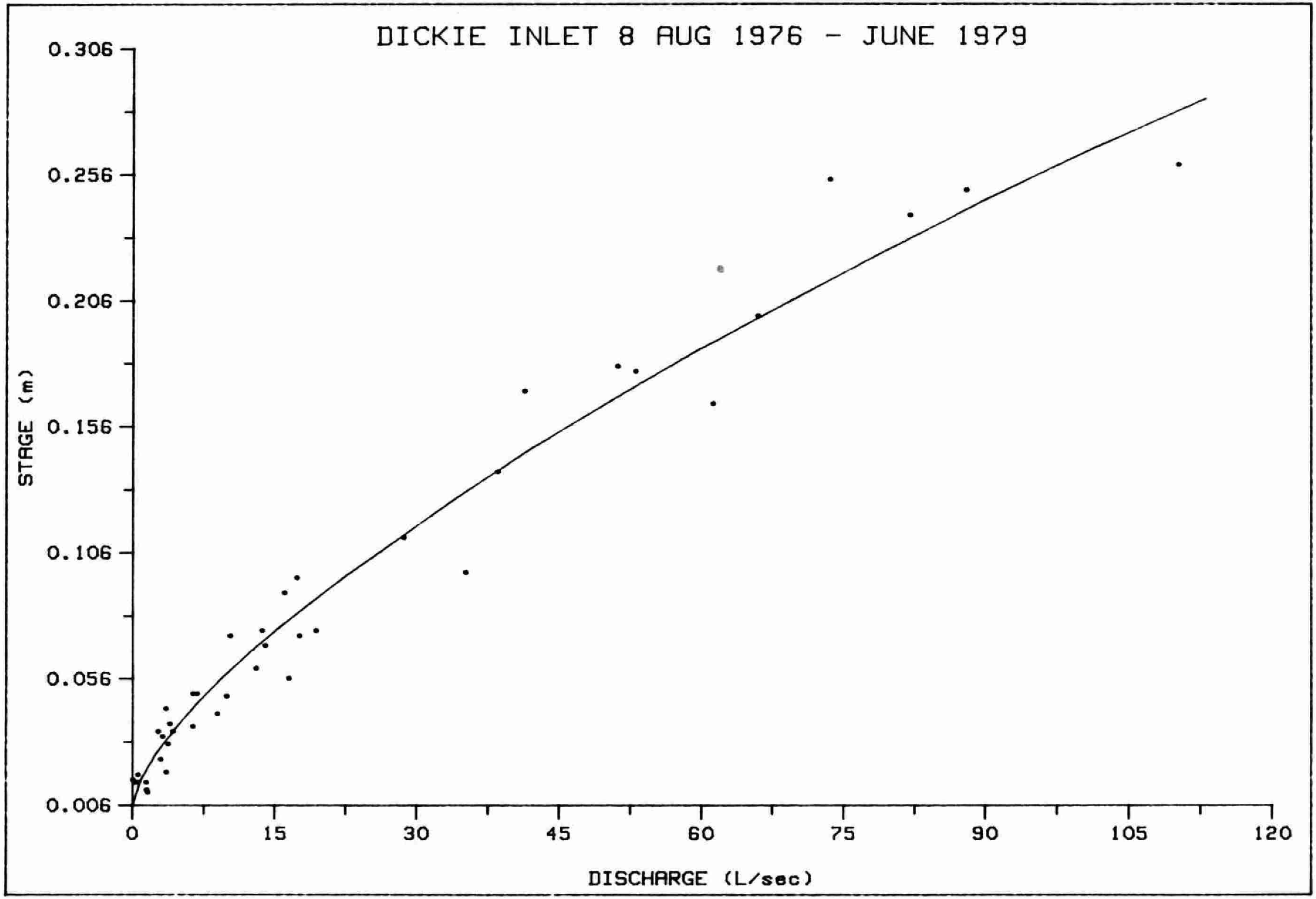

DICKIE INLET 8 AUG 1976 - JUNE 1979
STAGE (m)
0.306
0.256
0.206
0.156
0.106
0.056
0.006
DISCHARGE (L/sec)
0
15
30
45
60
75
90
105
120

FIGURE 59

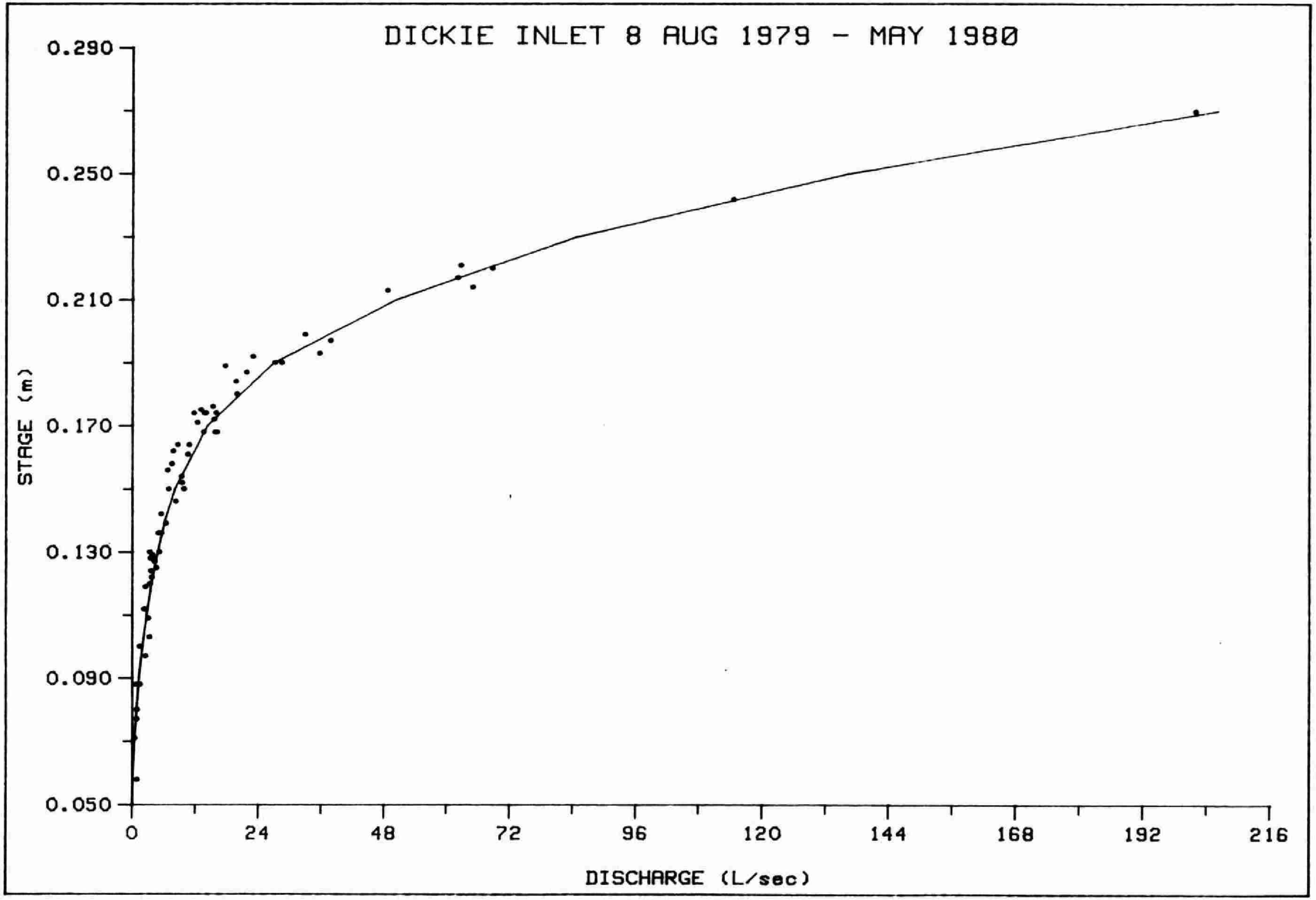

DICKIE INLET 8 AUG 1979 - MAY 1980
STAGE (m)
0.290
0.250
0.210
0.170
0.130
0.090
0.050
0
24
48
72
96
120
144
168
192
216
DISCHARGE (L/sec)

FIGURE 60

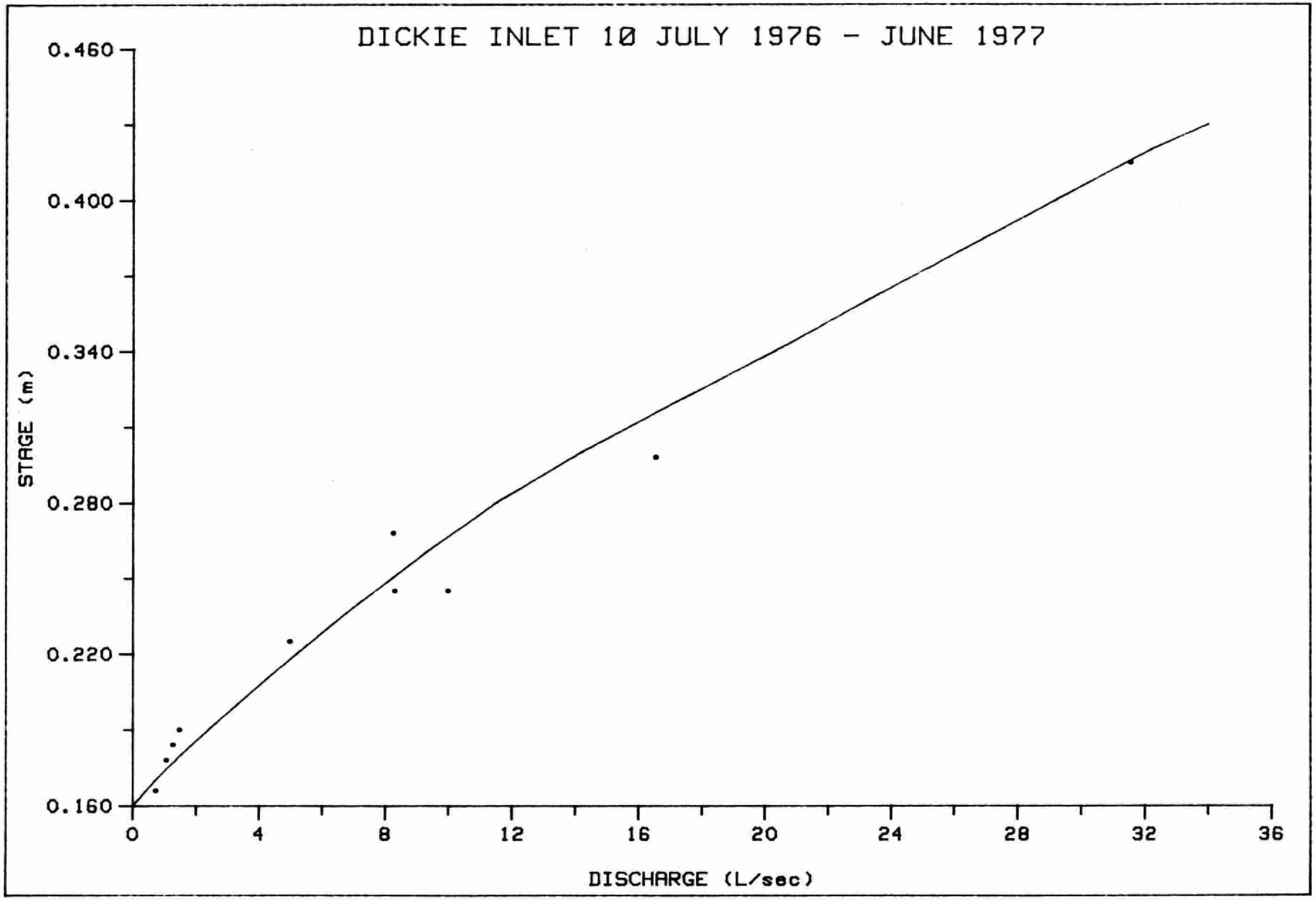

DICKIE INLET 10 JULY 1976 - JUNE 1977
STAGE (m)
0.460
0.400
0.340
0.280
0.220
0.160
0
4
8
12
16
20
24
28
32
36
DISCHARGE (L/sec)

FIGURE 61

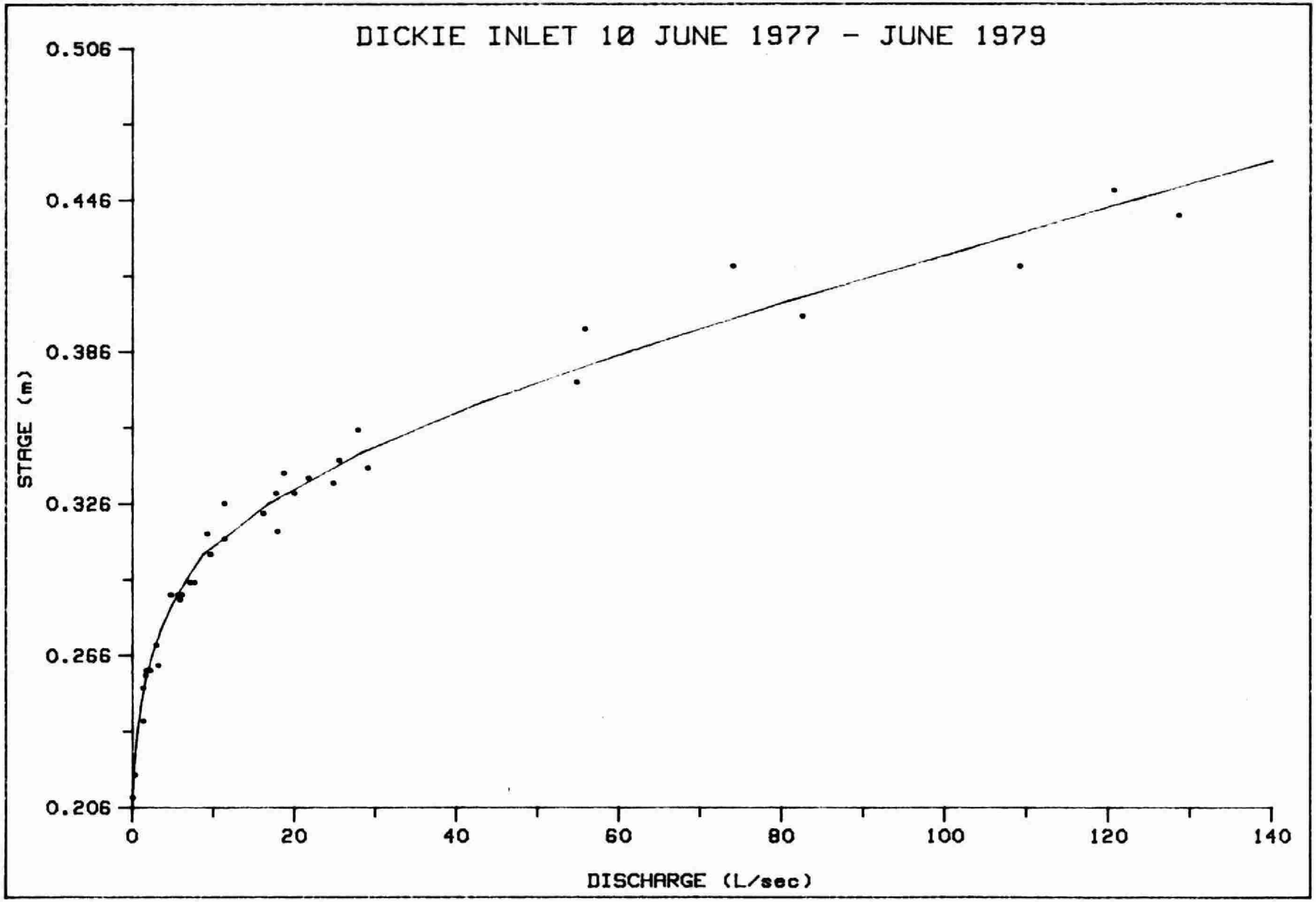

DICKIE INLET 10 JUNE 1977 - JUNE 1979
0.506
0.446
0.386
0.326
0.266
0.206
STAGE (m)
0
20
40
60
80
100
120
140
DISCHARGE (L/sec)

FIGURE 62

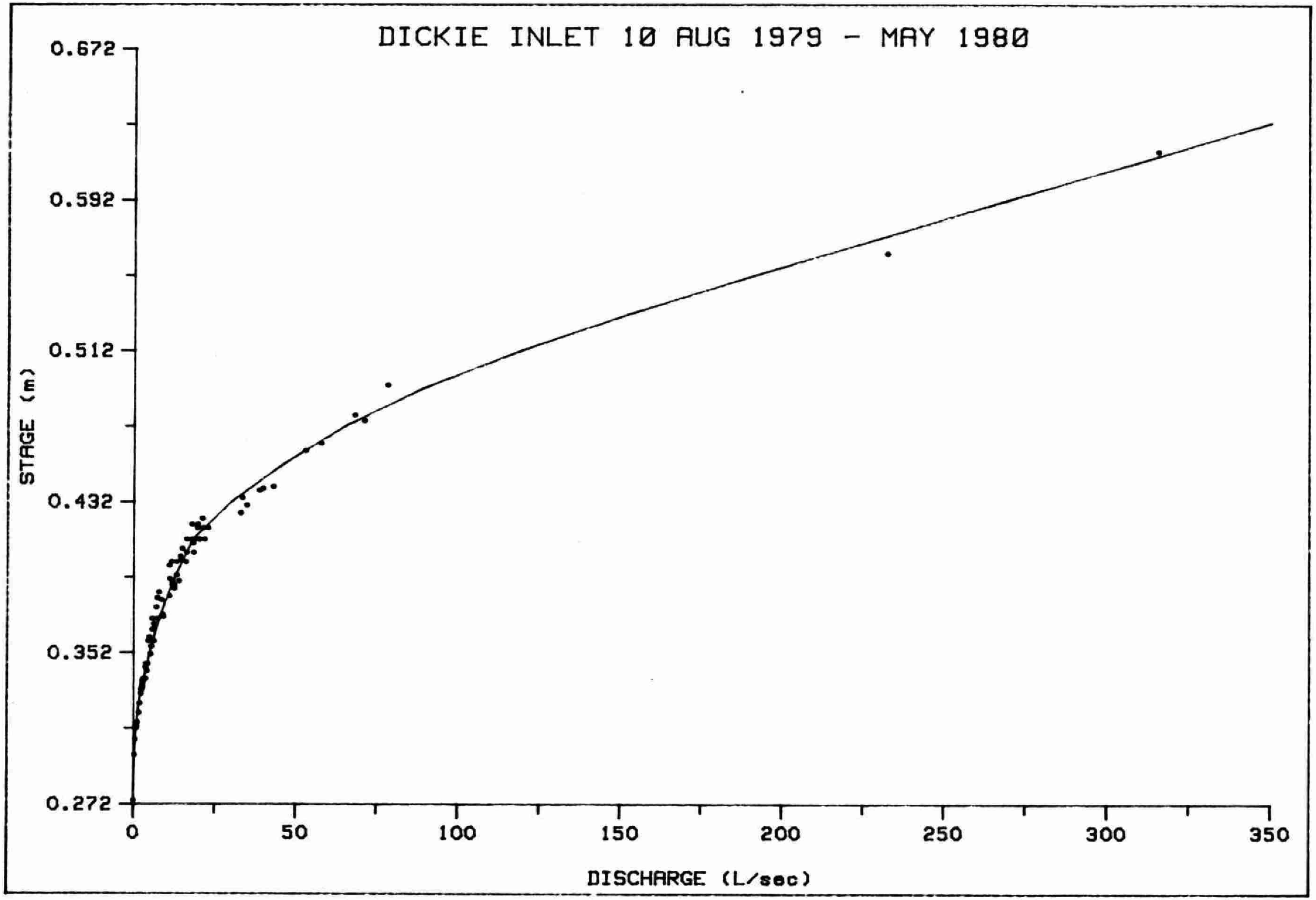

DICKIE INLET 10 AUG 1979 - MAY 1980
0.672
0.592
0.512
0.432
0.352
0.272
STAGE (m)
0
50
100
150
200
250
300
350
DISCHARGE (L/sec)

FIGURE 63

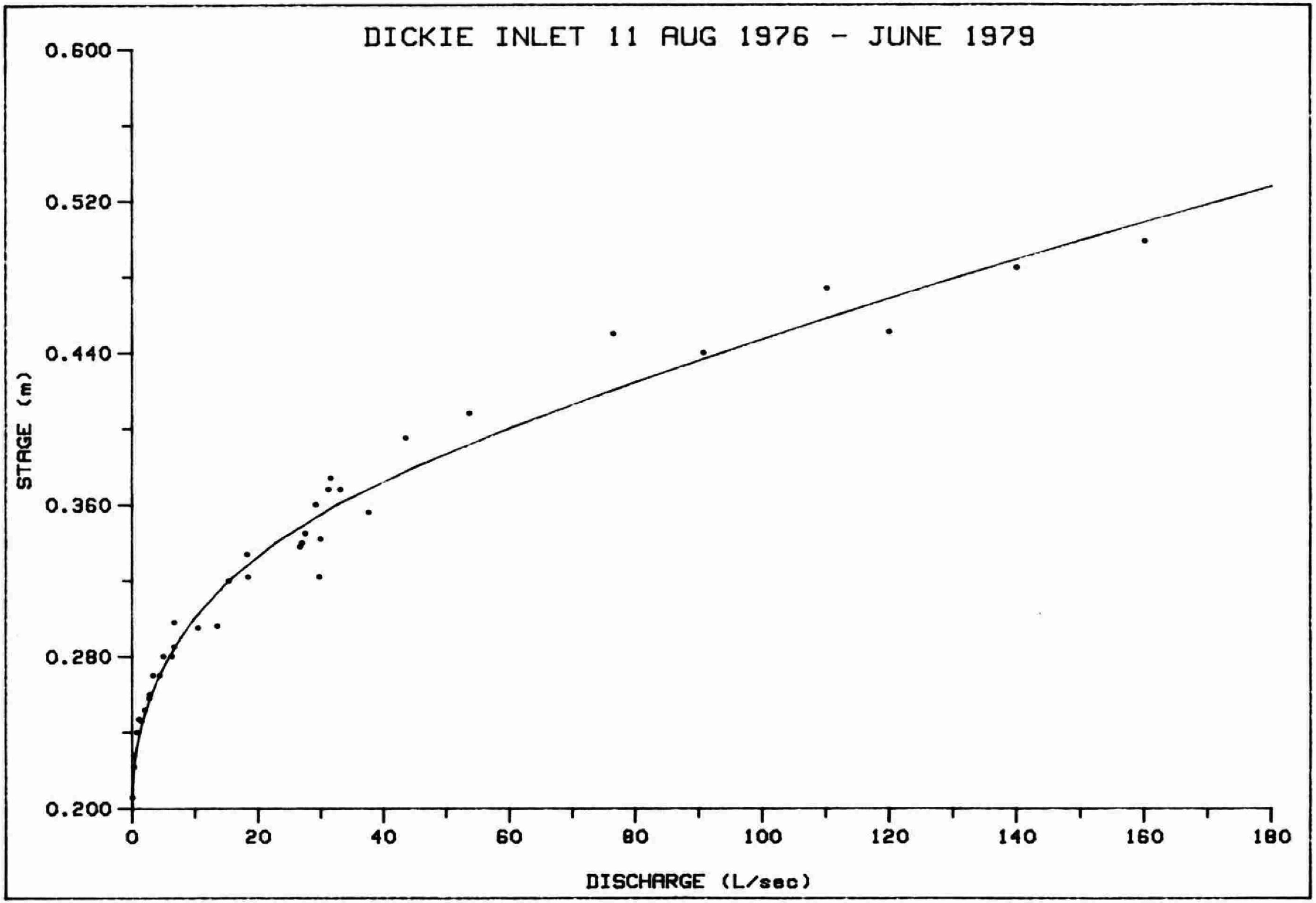

DICKIE INLET 11 AUG 1976 - JUNE 1979
STAGE (m)
0.600
0.520
0.440
0.360
0.280
0.200
0
20
40
60
80
100
120
140
160
180
DISCHARGE (L/sec)

FIGURE 64

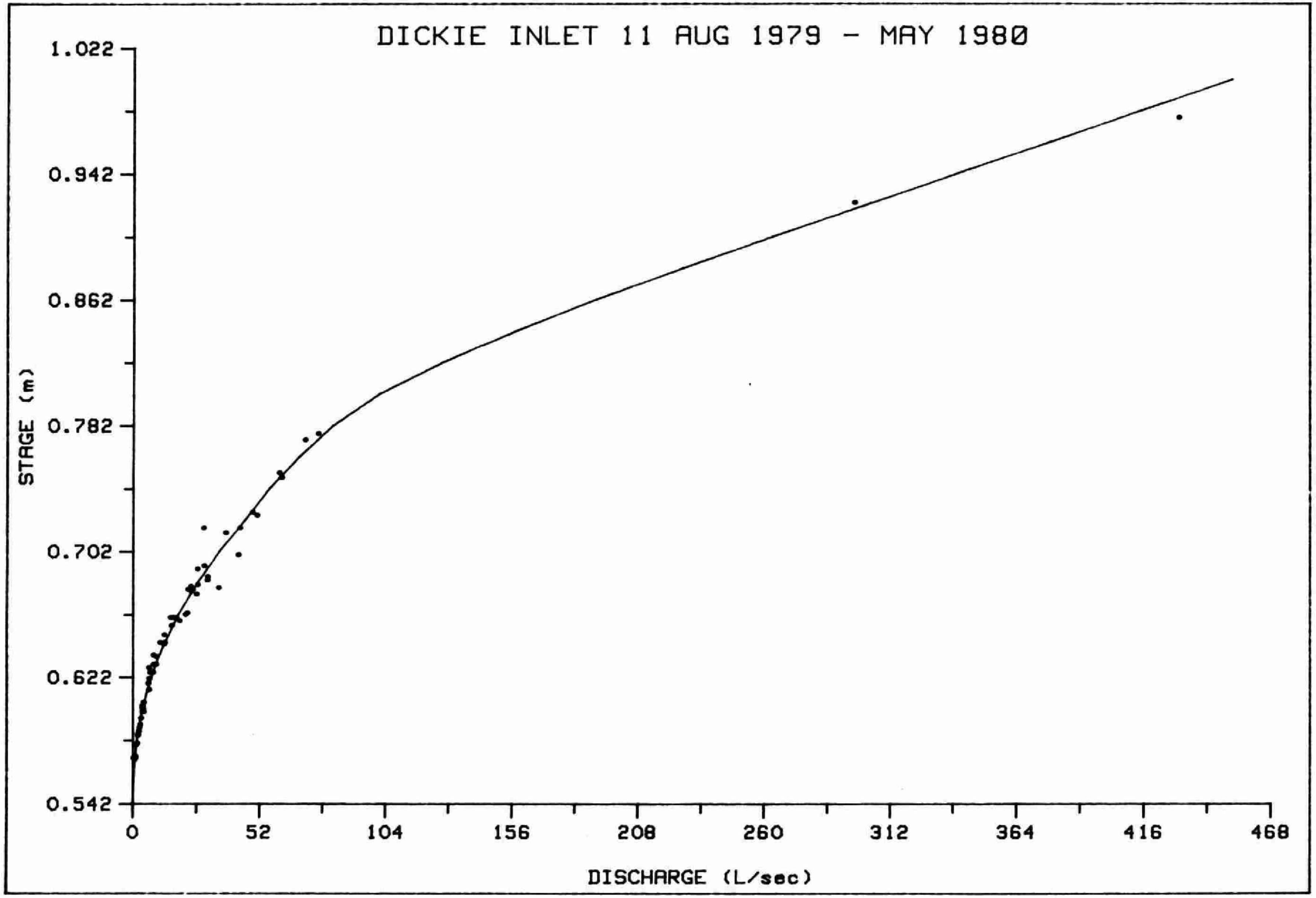

DICKIE INLET 11 AUG 1979 - MAY 1980
STAGE (m)
1.022
0.942
0.862
0.782
0.702
0.622
0.542
DISCHARGE (L/sec)
0
52
104
156
208
260
312
364
416
468

FIGURE 65

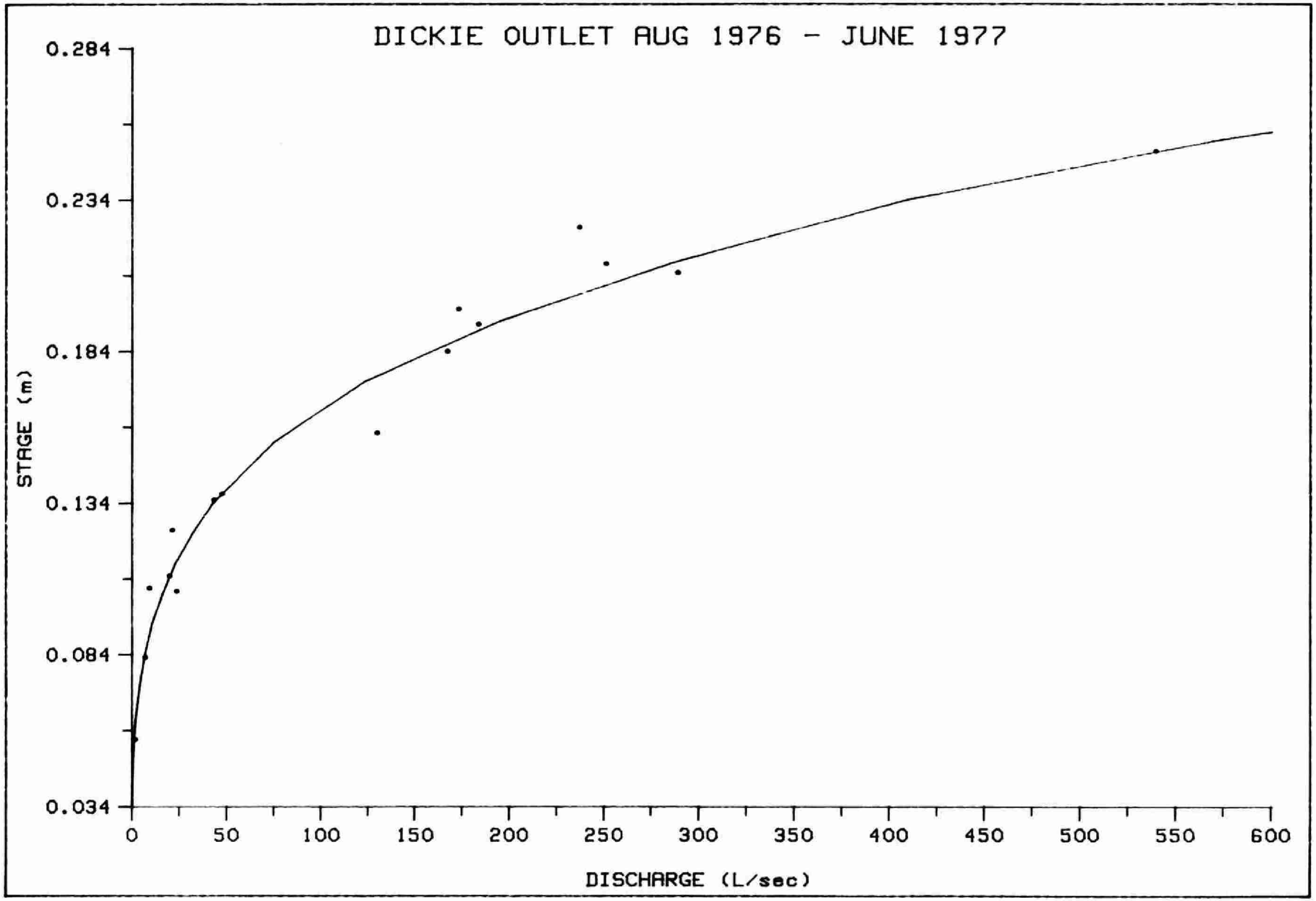

DICKIE OUTLET AUG 1976 - JUNE 1977
0.284
0.234
0.184
0.134
0.084
0.034
STAGE (m)
0
50
100
150
200
250
300
350
400
450
500
550
600
DISCHARGE (L/sec)

FIGURE 66

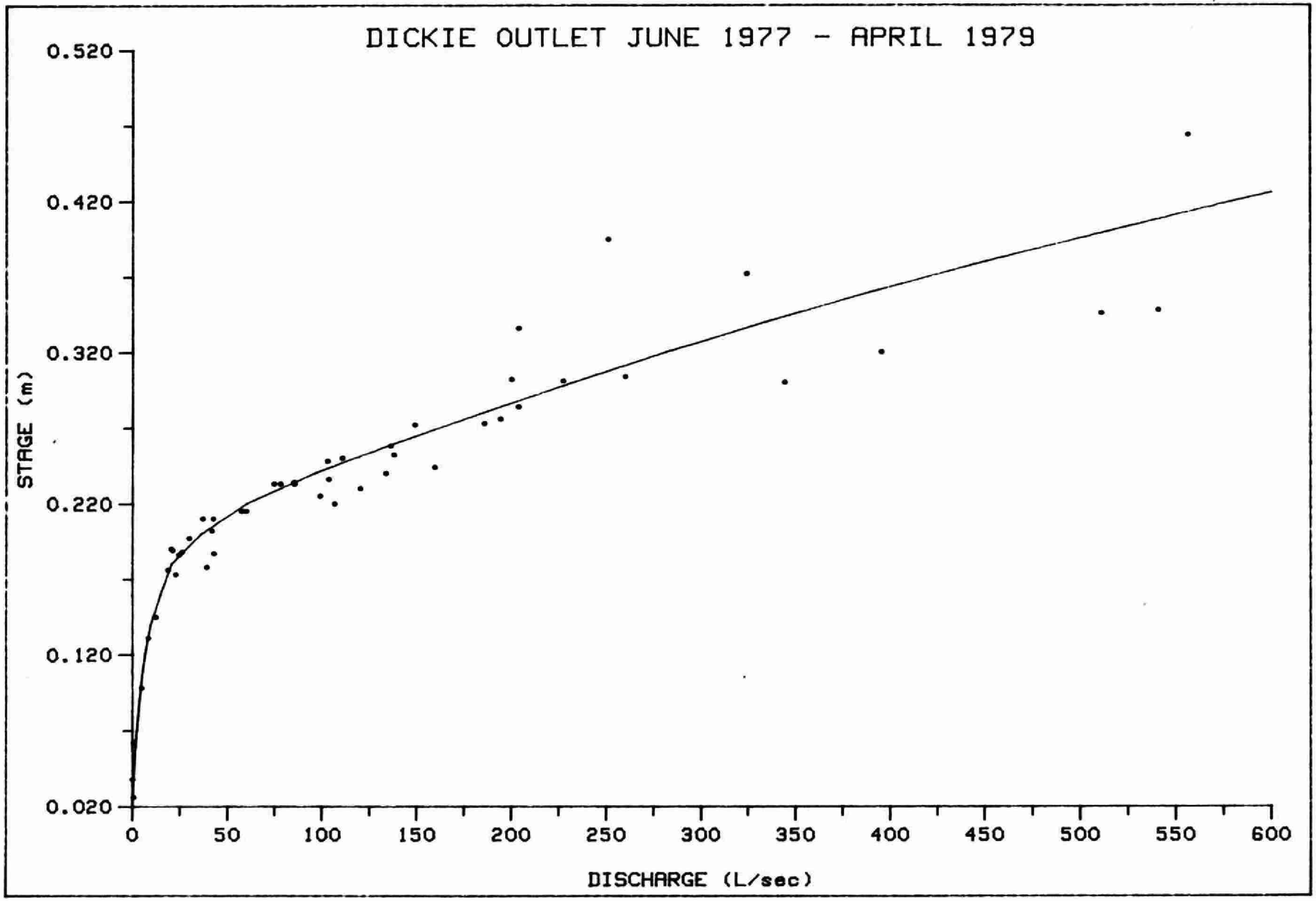

DICKIE OUTLET JUNE 1977 - APRIL 1979
0.520
0.420
0.320
0.220
0.120
0.020
STAGE (m)
0
50
100
150
200
250
300
350
400
450
500
550
600
DISCHARGE (L/sec)

FIGURE 67

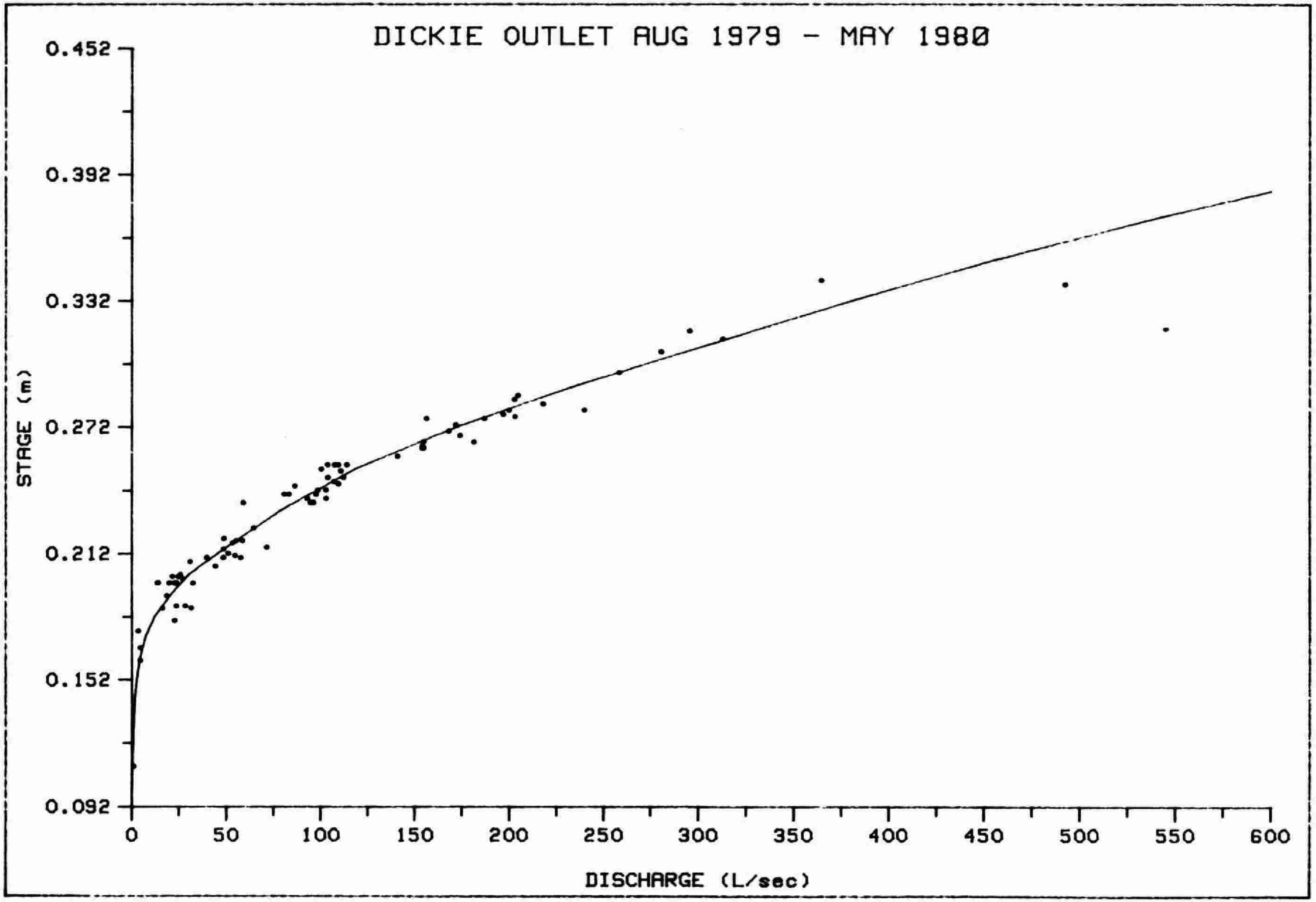

DICKIE OUTLET AUG 1979 - MAY 1980
STAGE (m)
0.452
0.392
0.332
0.272
0.212
0.152
0.092
0
50
100
150
200
250
300
350
400
450
500
550
600
DISCHARGE (L/sec)

FIGURE 68

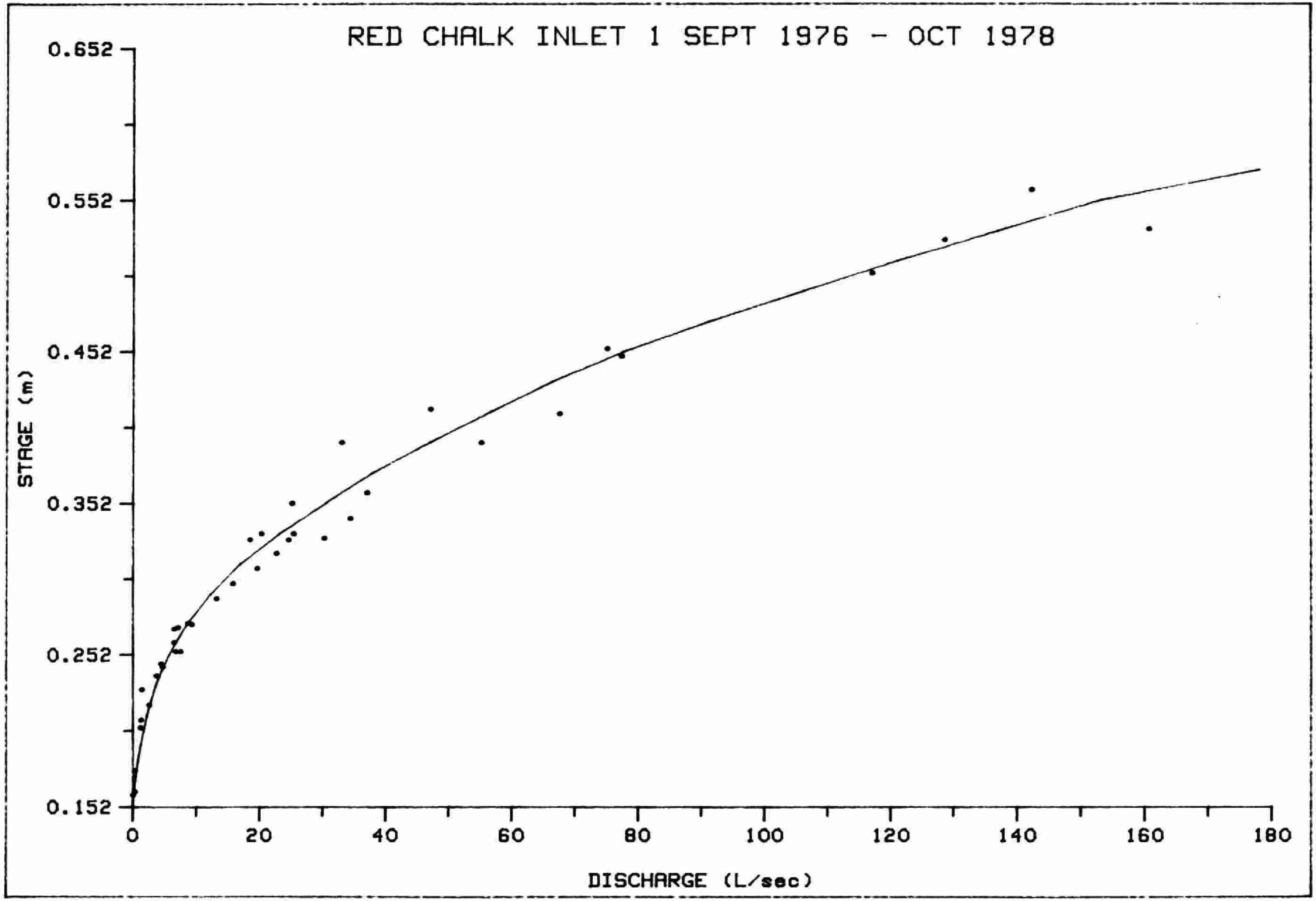

RED CHALK INLET 1 SEPT 1976 - OCT 1978
STAGE (m)
0.652
0.552
0.452
0.352
0.252
0.152
0
20
40
60
80
100
120
140
160
180
DISCHARGE (L/sec)

FIGURE 69

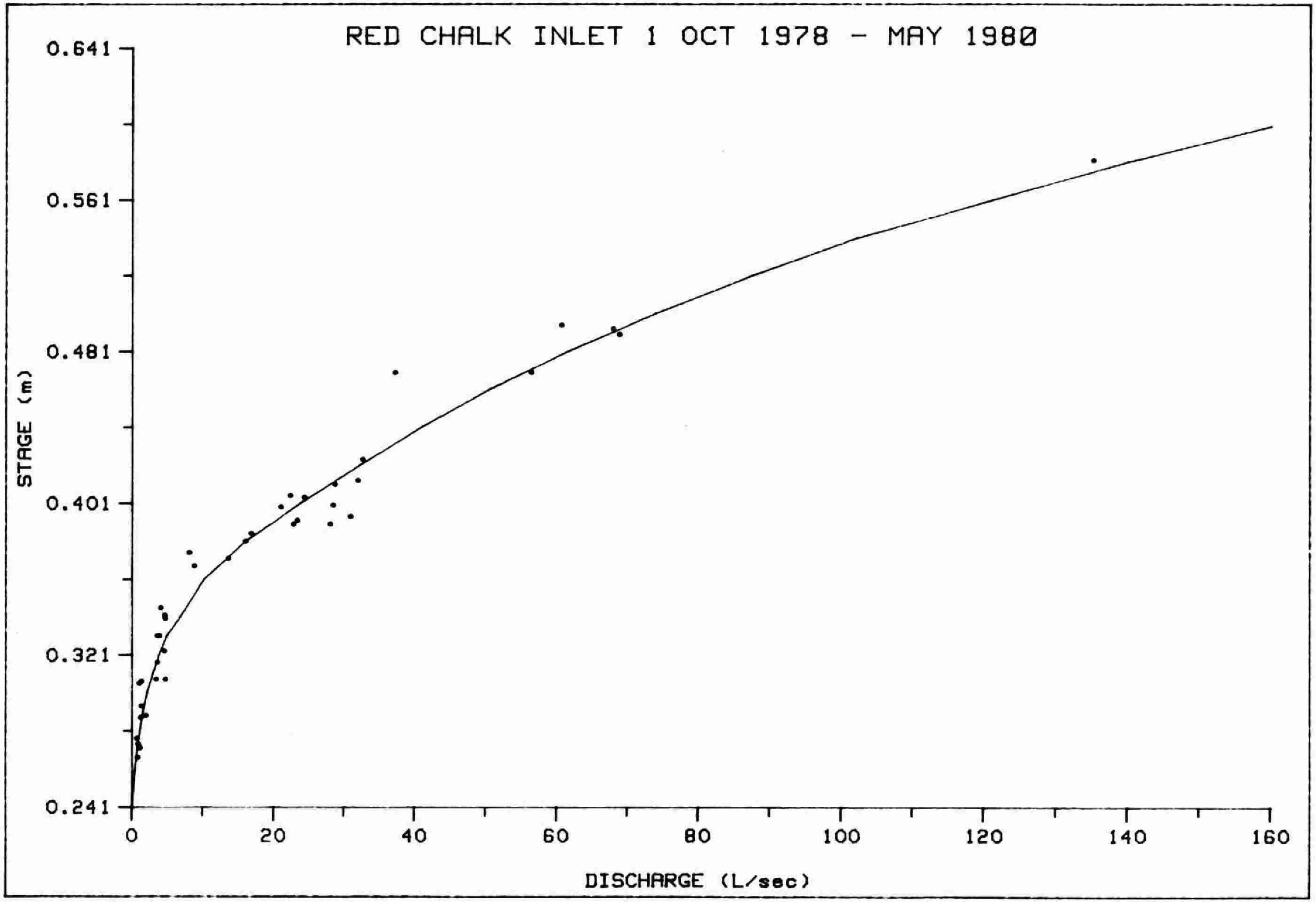

RED CHALK INLET 1 OCT 1978 - MAY 1980
STAGE (m)
0.641
0.561
0.481
0.401
0.321
0.241
0
20
40
60
80
100
120
140
160
DISCHARGE (L/sec)

FIGURE 70

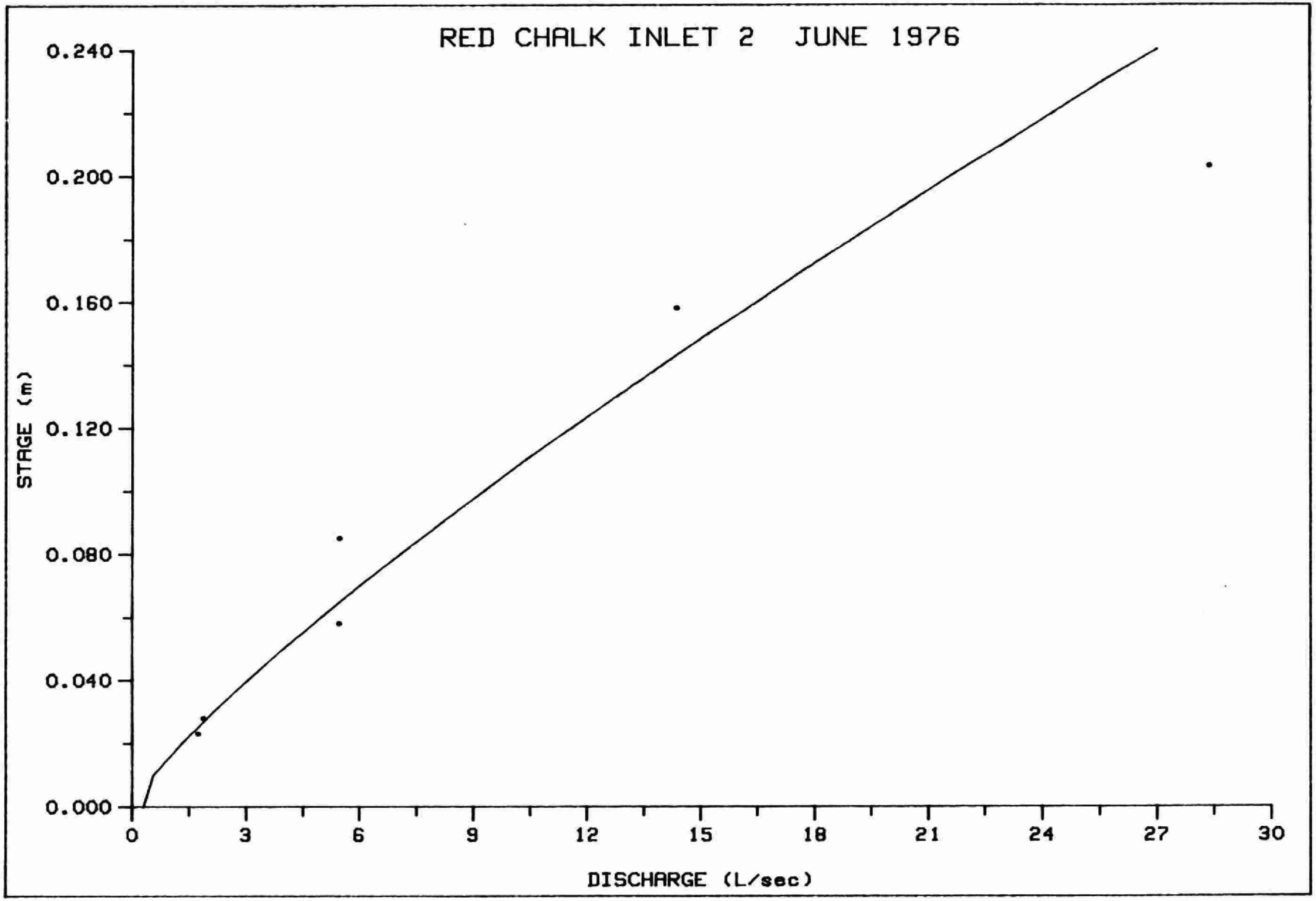

RED CHALK INLET 2 JUNE 1976
STAGE (m)
0.240
0.200
0.160
0.120
0.080
0.040
0.000
0
3
6
9
12
15
18
21
24
27
30
DISCHARGE (L/sec)

FIGURE 71

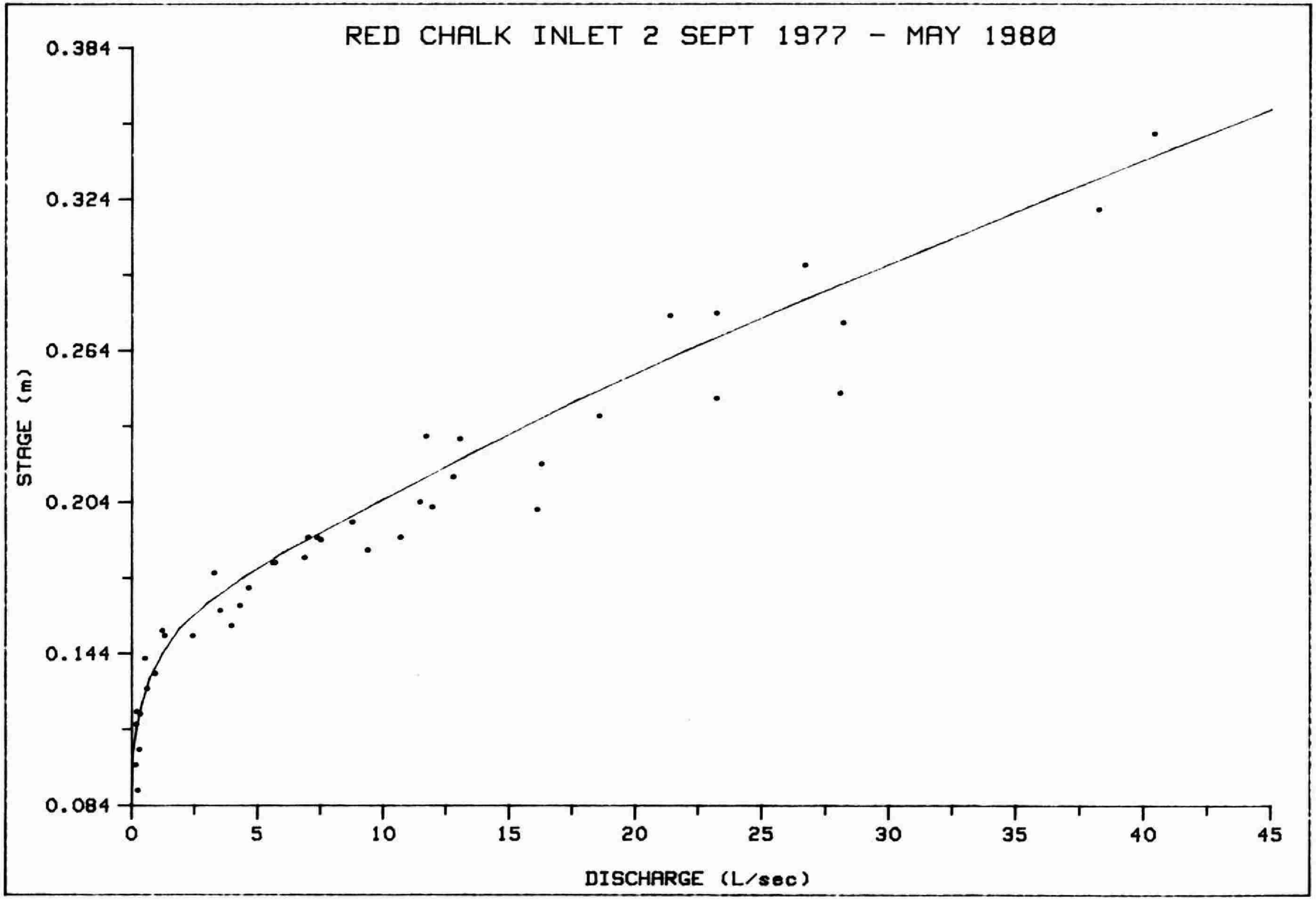

RED CHALK INLET 2 SEPT 1977 - MAY 1980
0.384
0.324
0.264
0.204
0.144
0.084
STAGE (m)
0
5
10
15
20
25
30
35
40
45
DISCHARGE (L/sec)

FIGURE 72

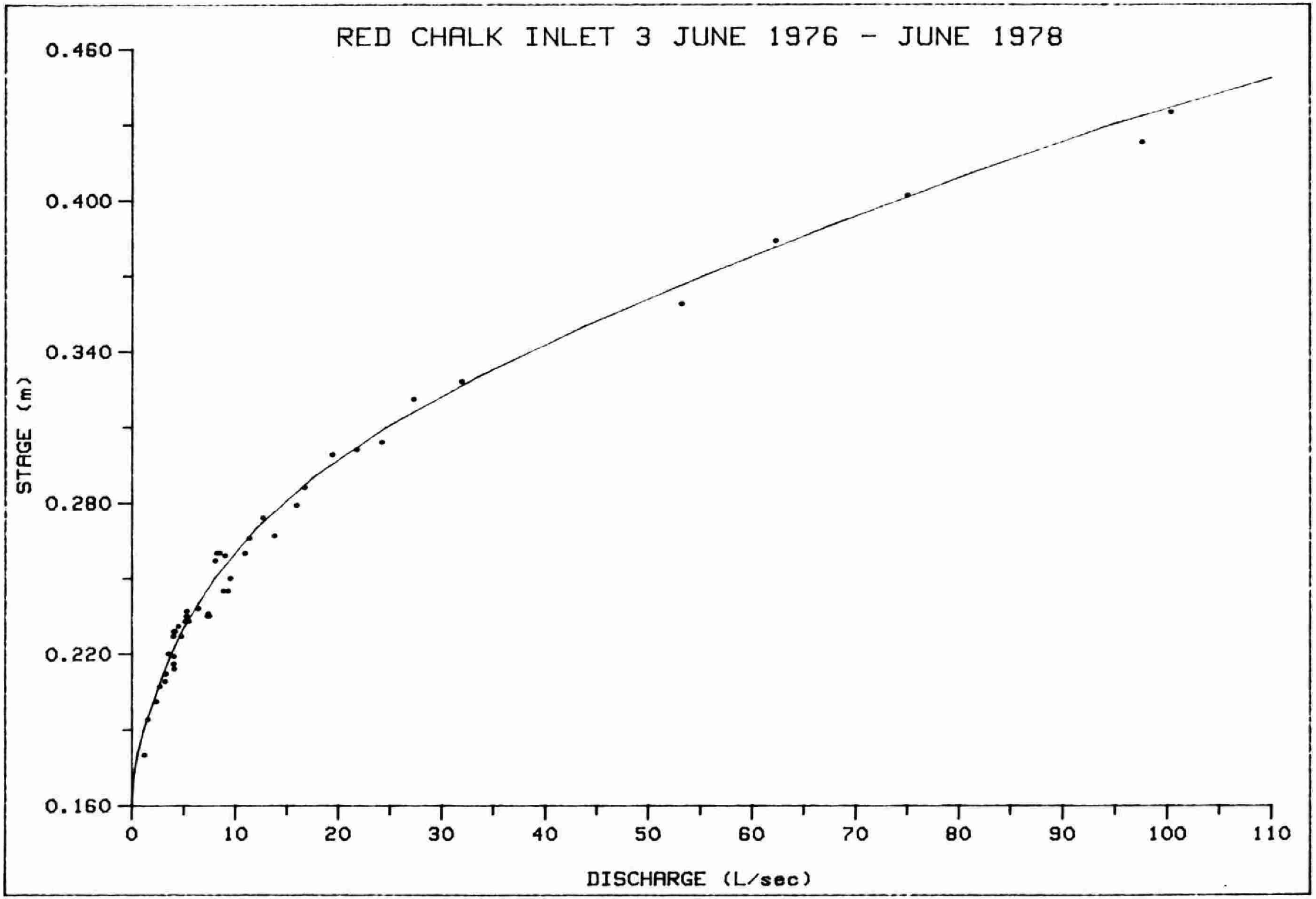
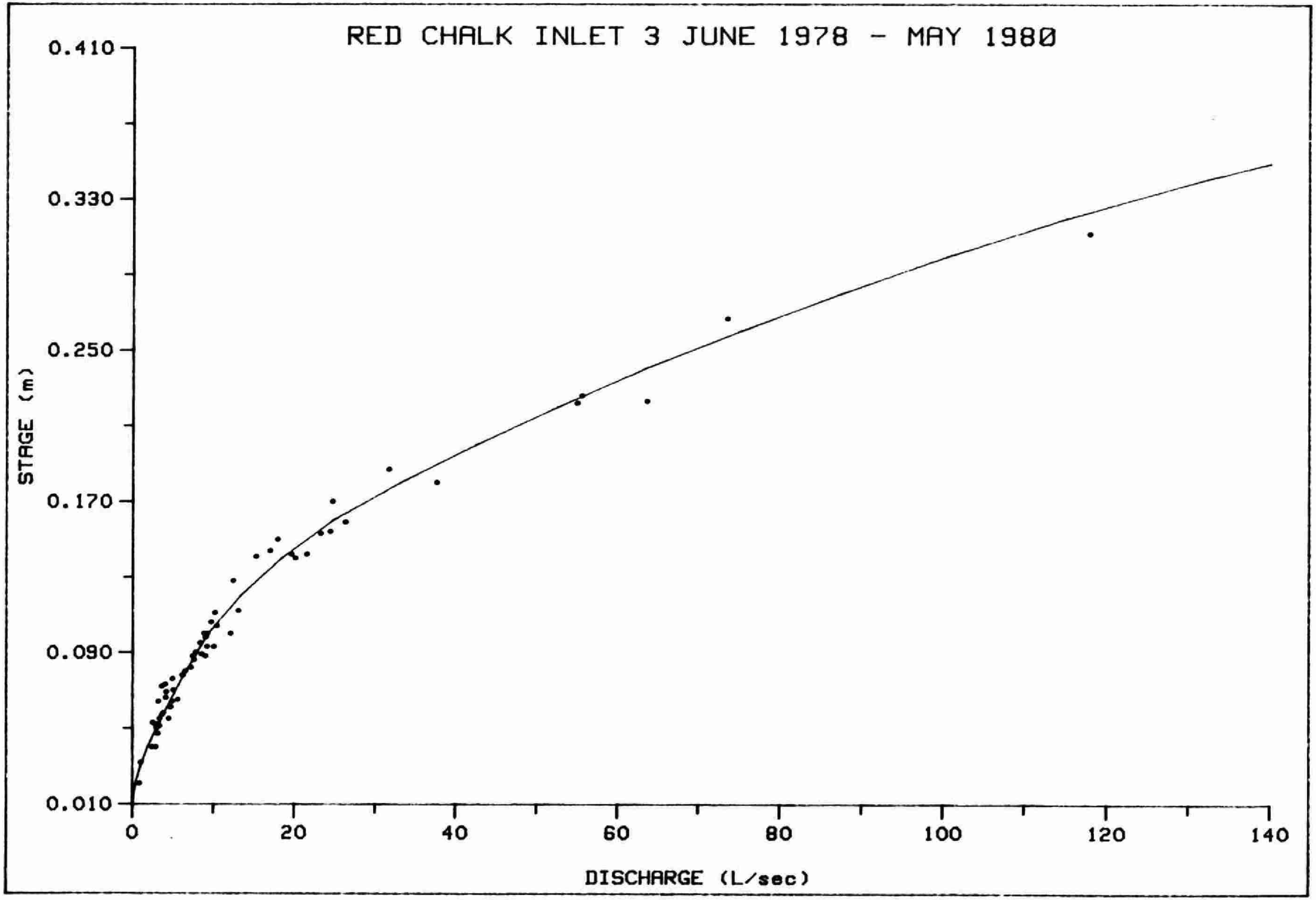
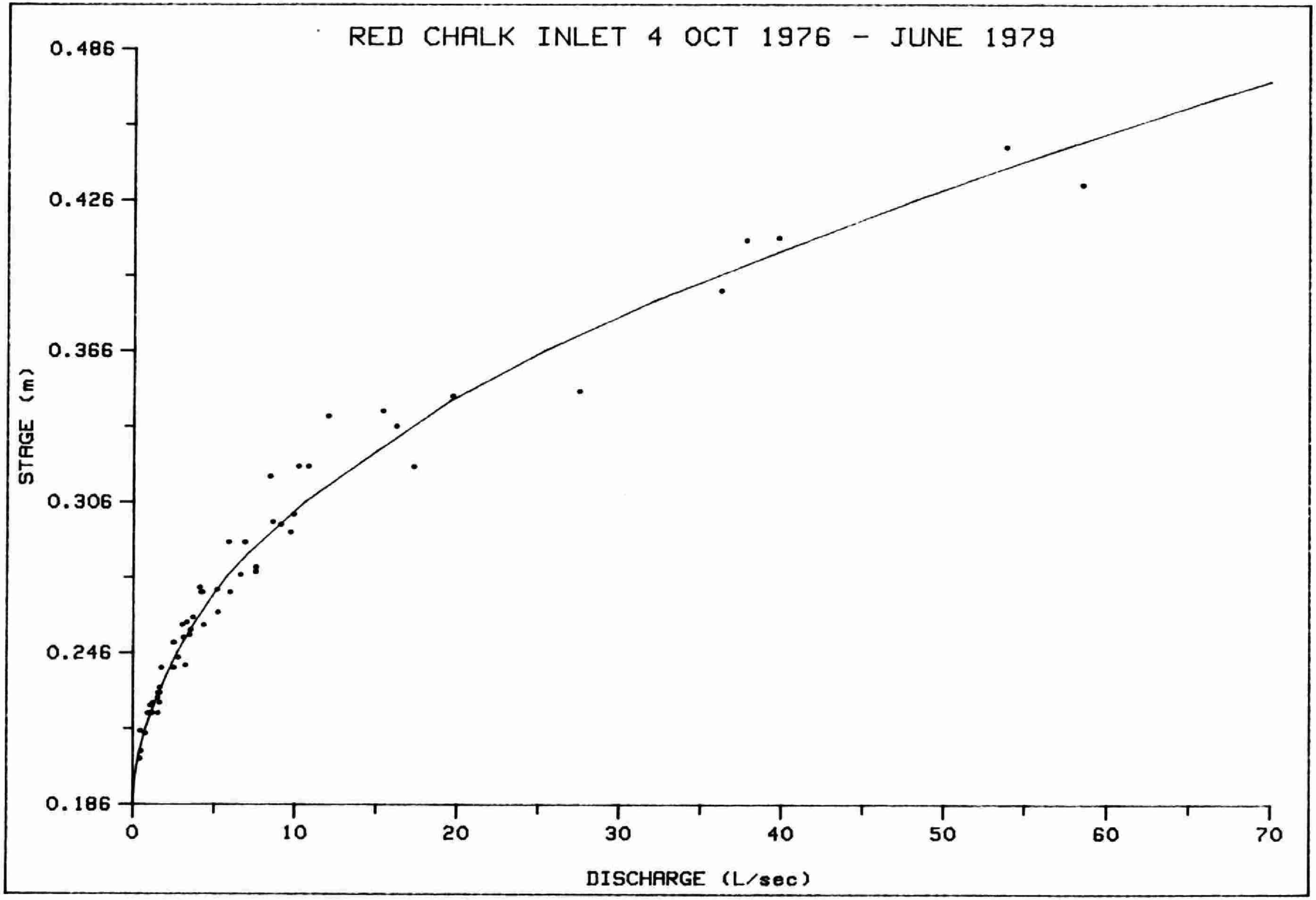

RED CHALK INLET 3 JUNE 1976 - JUNE 1978
STAGE (m)
0.460
0.400
0.340
0.280
0.220
0.160
DISCHARGE (L/sec)
0
10
20
30
40
50
60
70
80
90
100
110

FIGURE 73



RED CHALK INLET 3 JUNE 1978 - MAY 1980
0.410
0.330
0.250
0.170
0.090
0.010
STAGE (m)
0
20
40
60
80
100
120
140
DISCHARGE (L/sec)

FIGURE 74



RED CHALK INLET 4 OCT 1976 - JUNE 1979
0.486
0.426
0.366
0.306
0.246
0.186
STAGE (m)
0
10
20
30
40
50
60
70
DISCHARGE (L/sec)

FIGURE 75

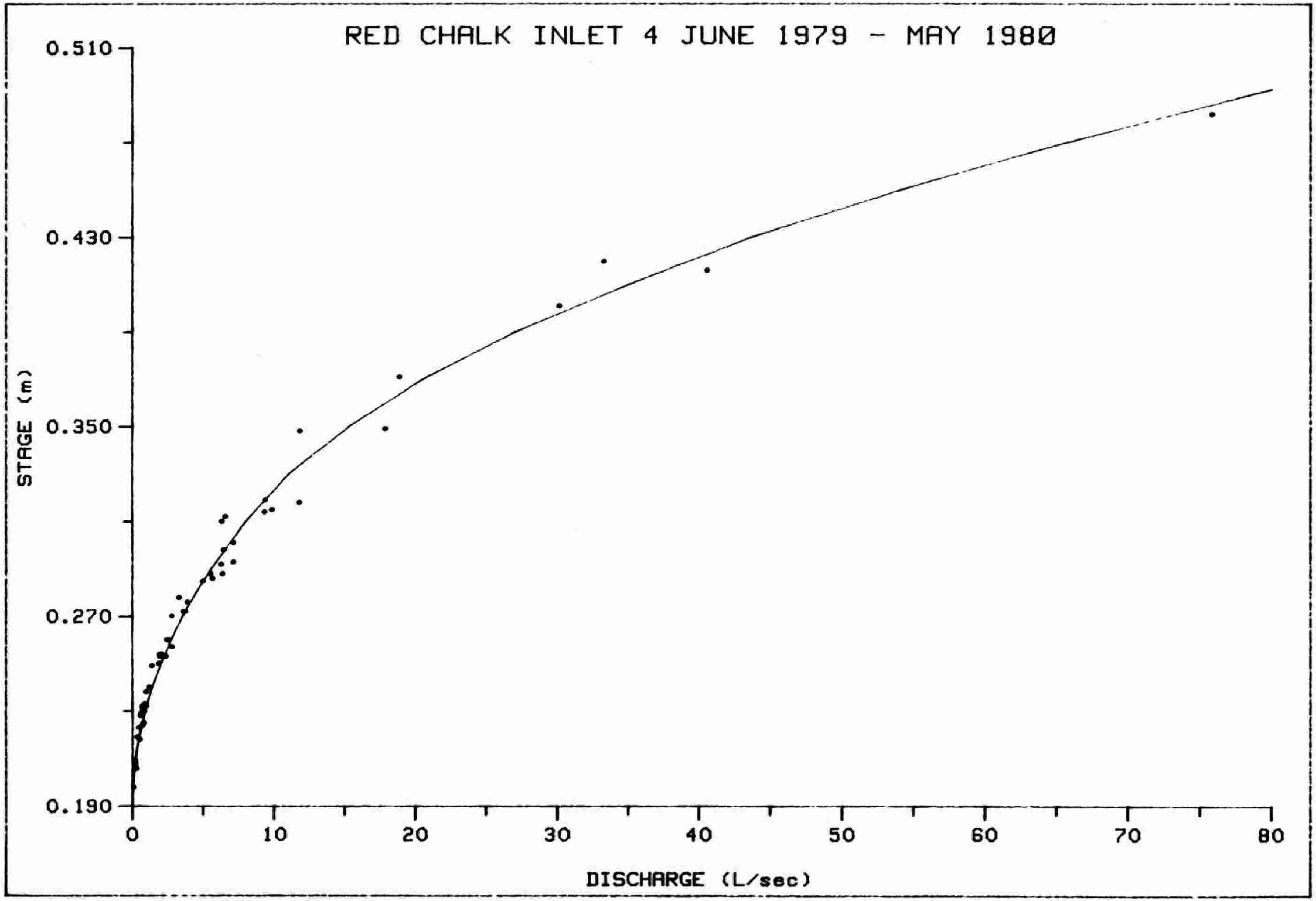

RED CHALK INLET 4 JUNE 1979 - MAY 1980
STAGE (m)
0.510
0.430
0.350
0.270
0.190
DISCHARGE (L/sec)
0
10
20
30
40
50
60
70
80

FIGURE 76

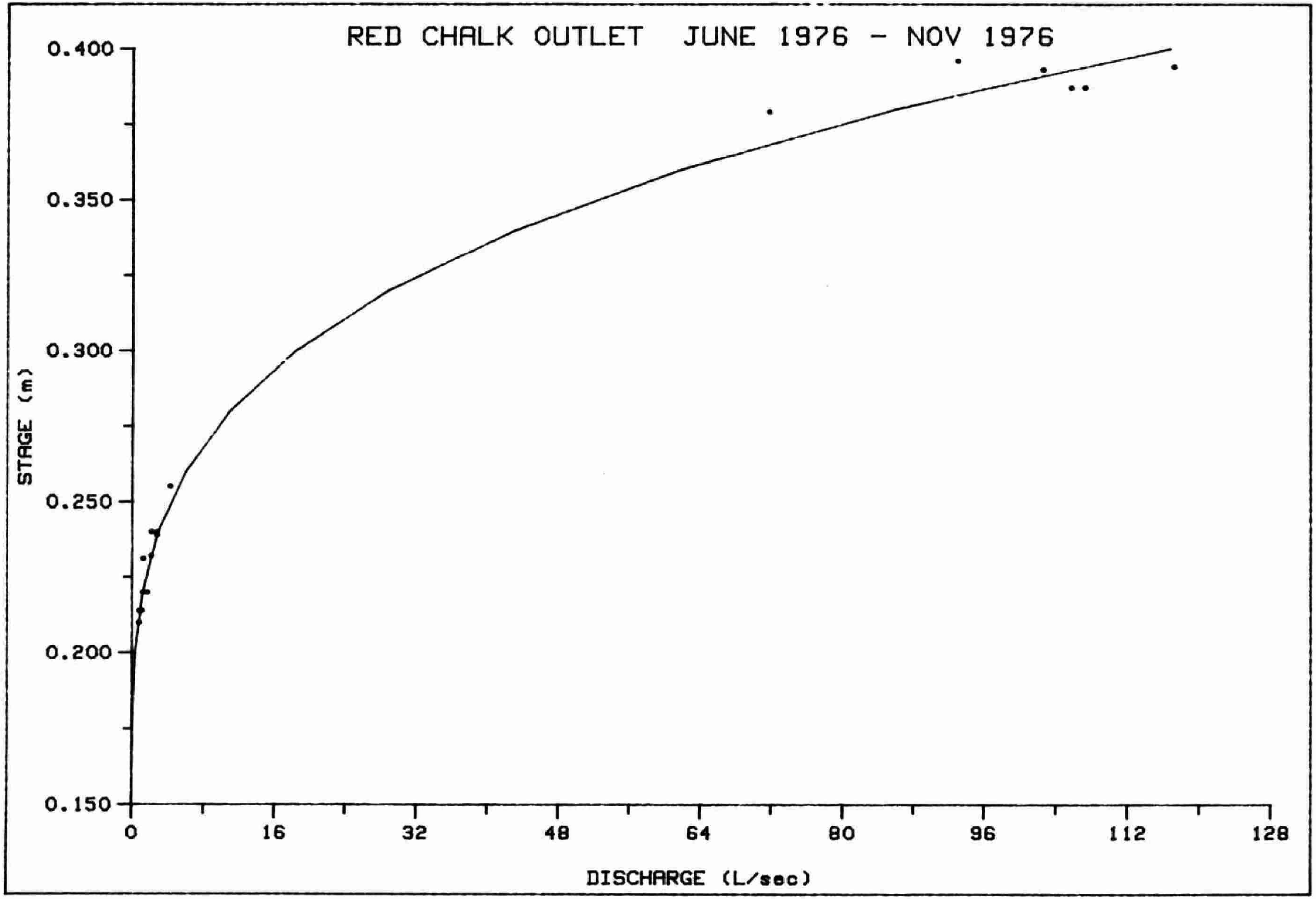
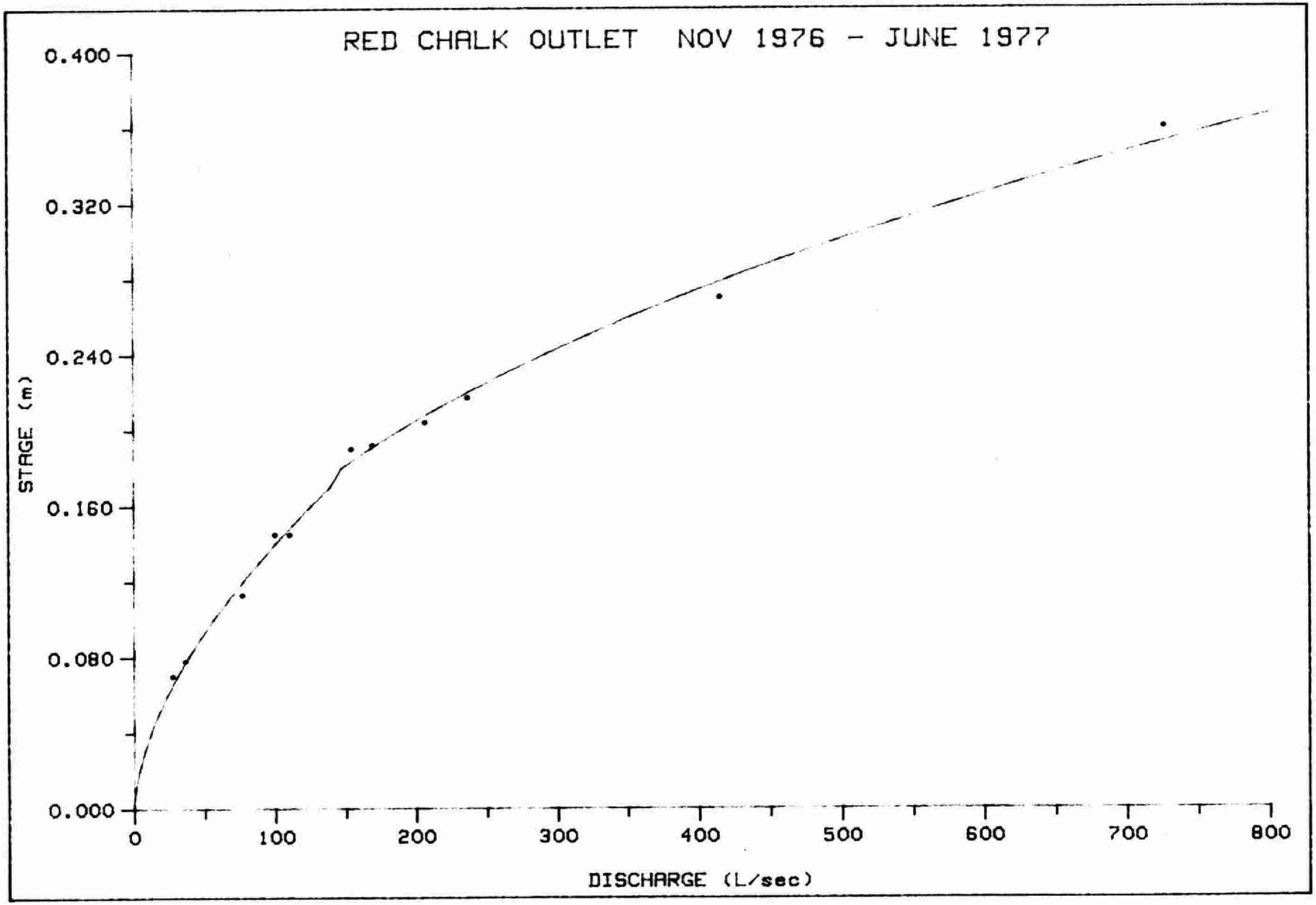

RED CHALK OUTLET JUNE 1976 - NOV 1976
STAGE (m)
0.400
0.350
0.300
0.250
0.200
0.150
0
16
32
48
64
80
96
112
128
DISCHARGE (L/sec)

FIGURE 77



RED CHALK OUTLET NOV 1976 - JUNE 1977
STAGE (m)
0.400
0.320
0.240
0.160
0.080
0.000
0
100
200
300
400
500
600
700
800
DISCHARGE (L/sec)

FIGURE 78

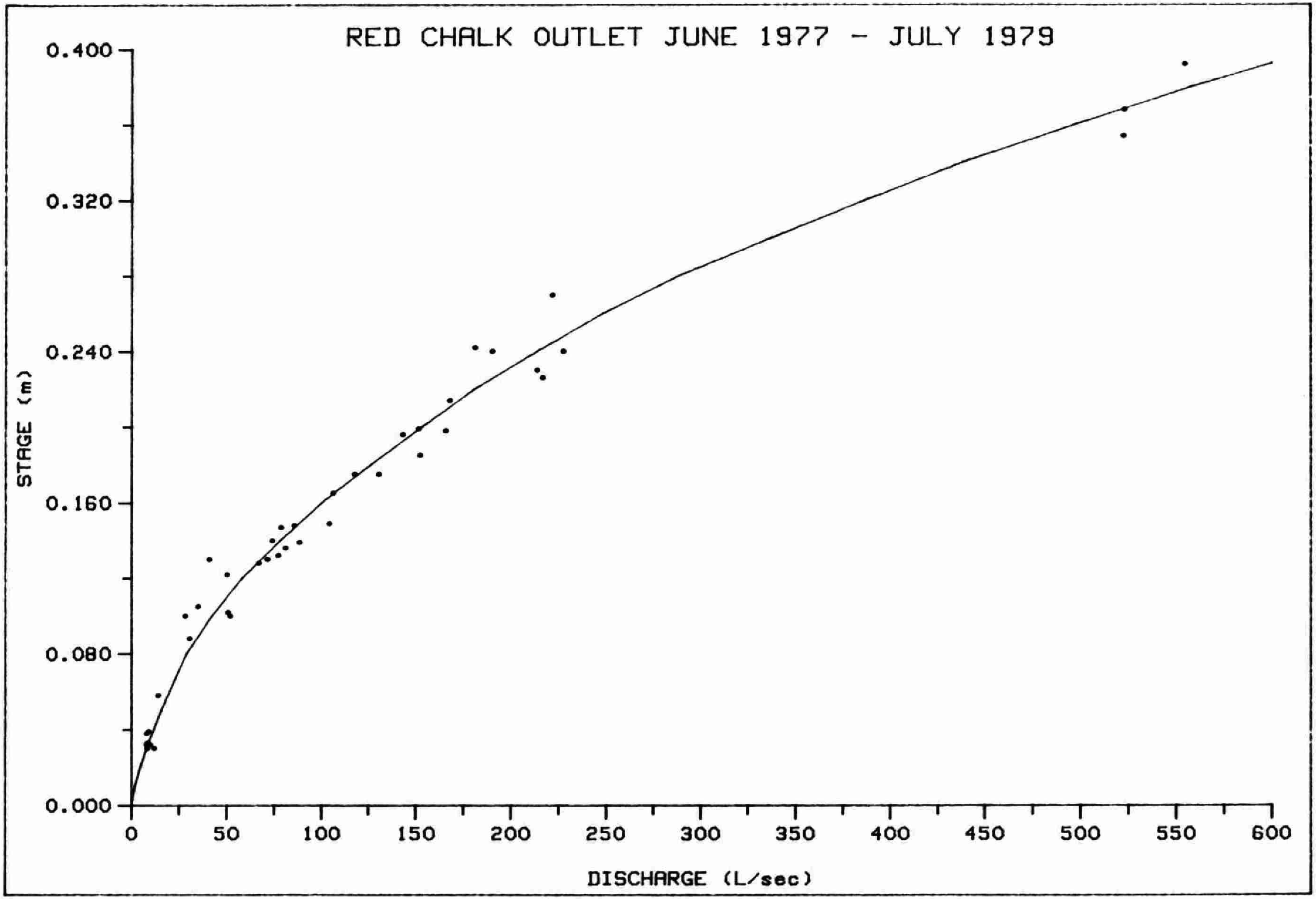

RED CHALK OUTLET JUNE 1977 - JULY 1979
STAGE (m)
0.000
0.080
0.160
0.240
0.320
0.400
DISCHARGE (L/sec)
0
50
100
150
200
250
300
350
400
450
500
550
600

FIGURE 79

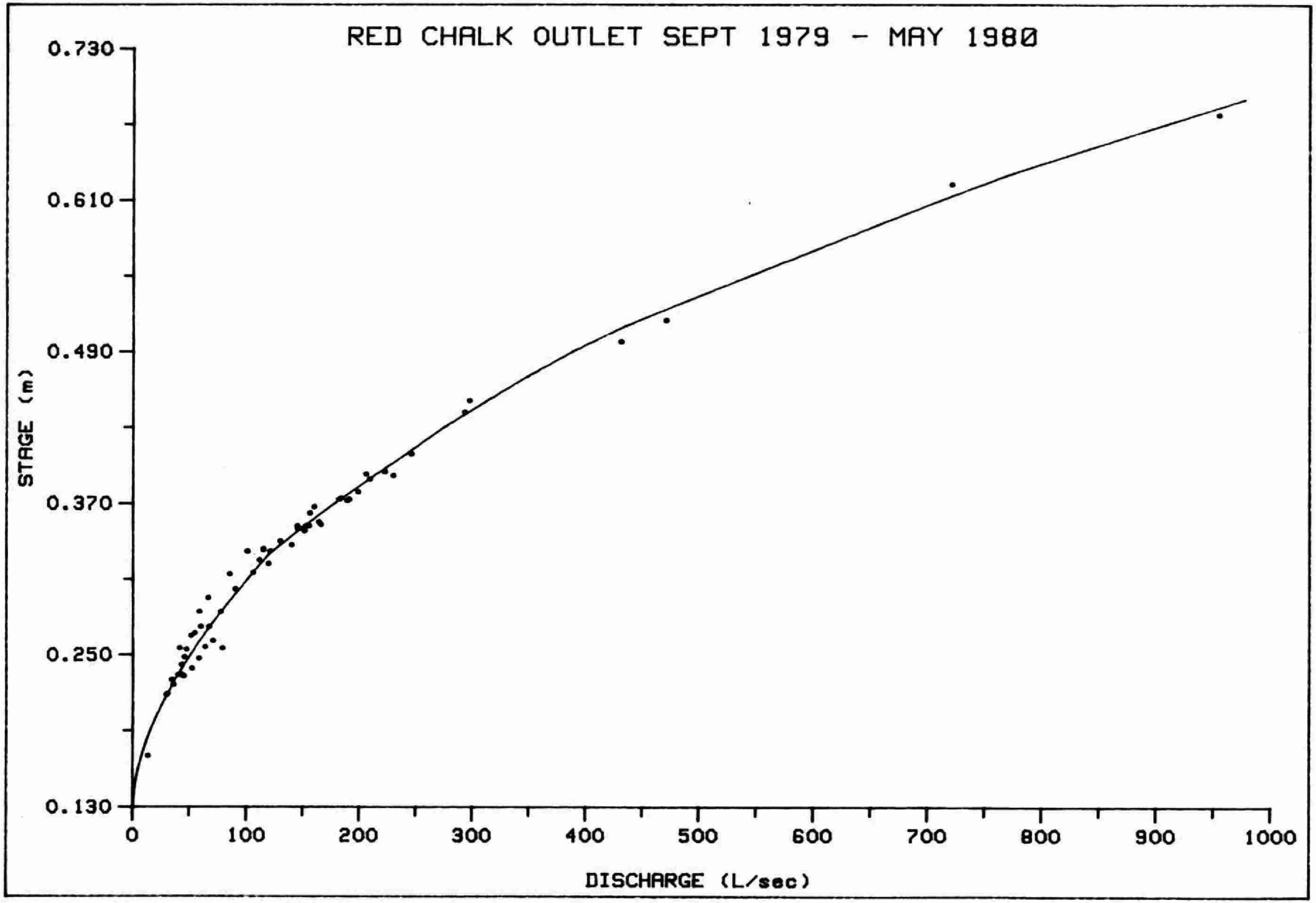

RED CHALK OUTLET SEPT 1979 - MAY 1980
0.730
0.610
0.490
0.370
0.250
0.130
STAGE (m)
0
100
200
300
400
500
600
700
800
900
1000
DISCHARGE (L/sec)

FIGURE 80

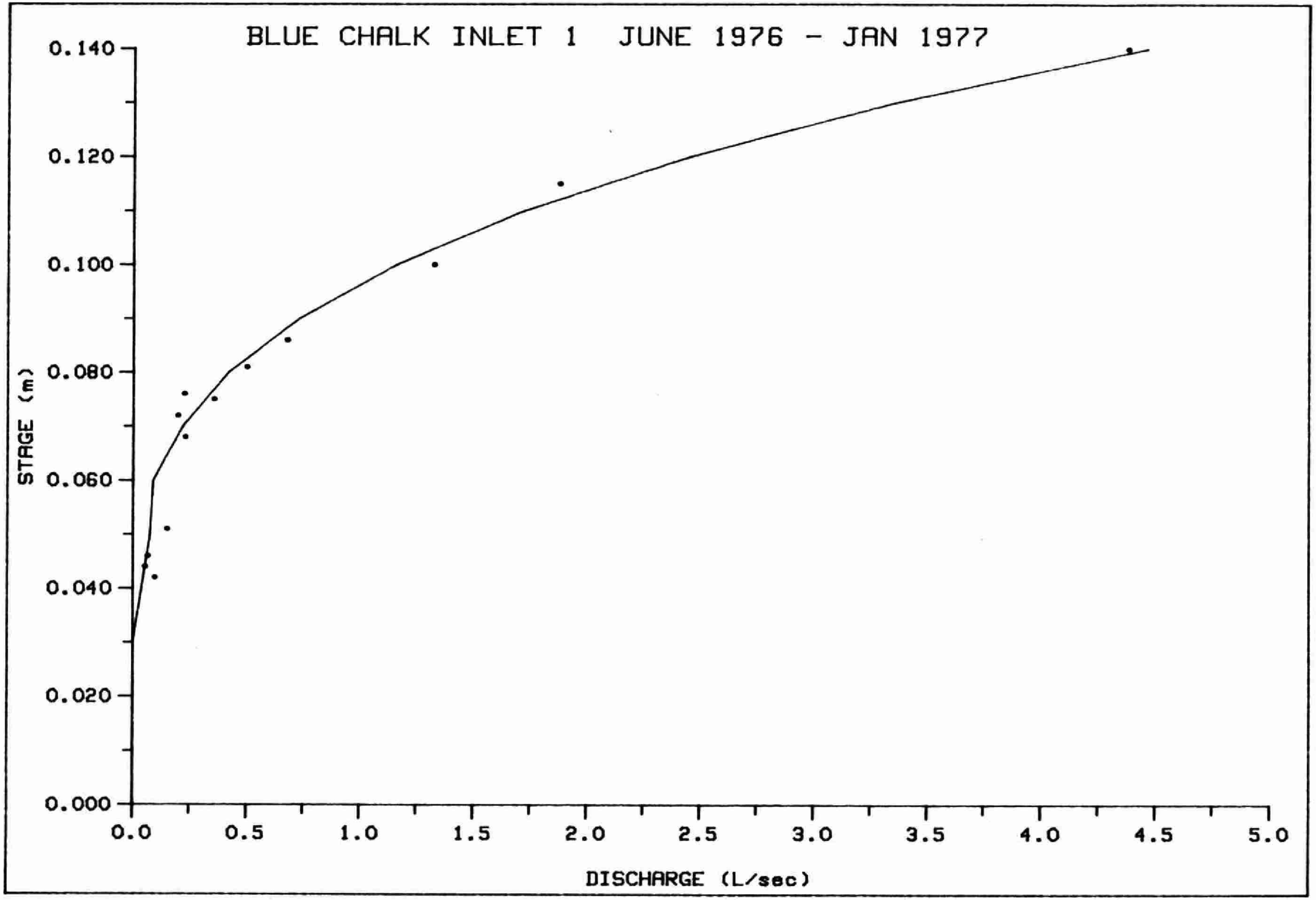

BLUE CHALK INLET 1 JUNE 1976 - JAN 1977
STAGE (m)
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
DISCHARGE (L/sec)

FIGURE 81

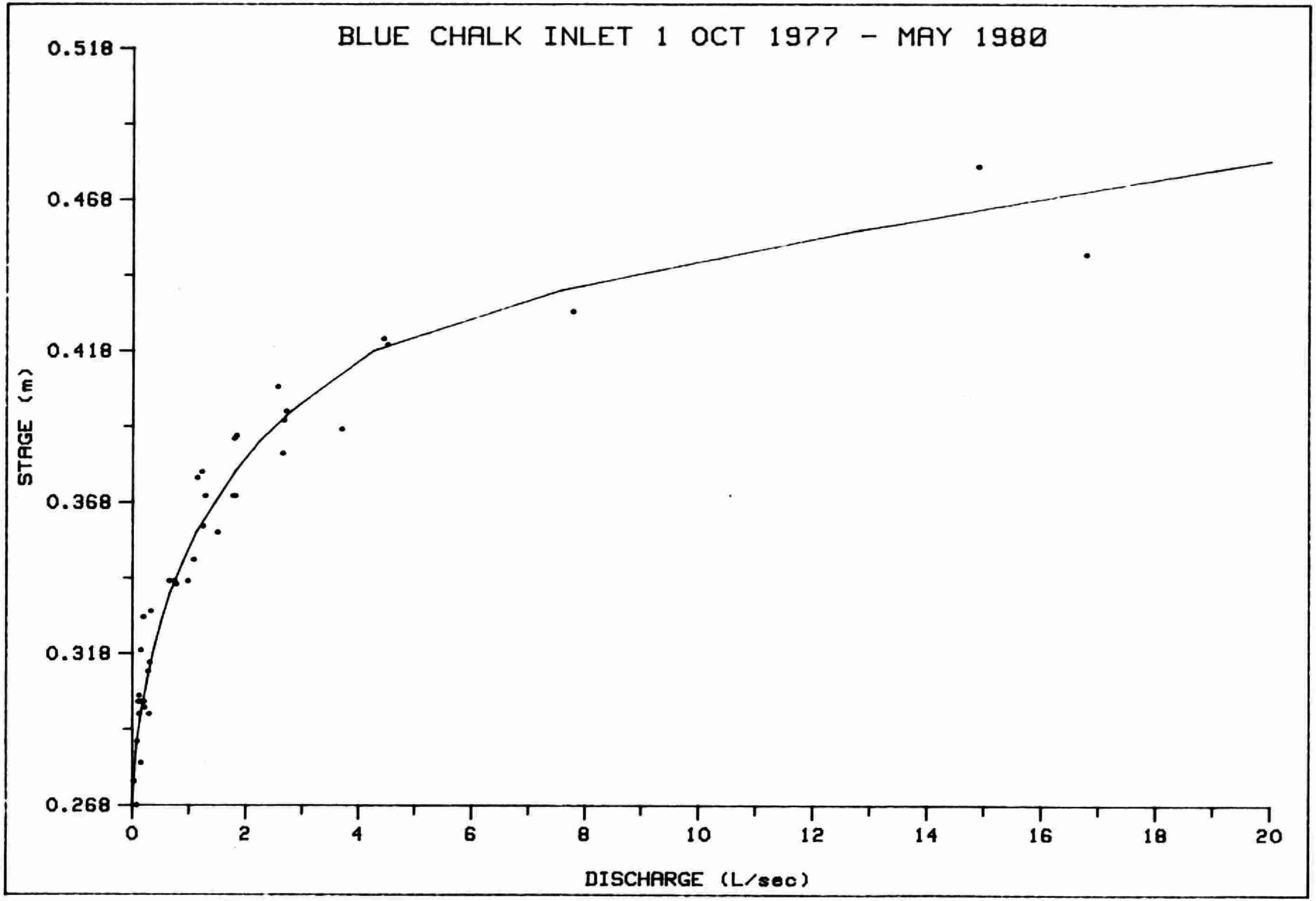

BLUE CHALK INLET 1 OCT 1977 - MAY 1980
0.518
0.468
0.418
0.368
0.318
0.268
STAGE (m)
0
2
4
6
8
10
12
14
16
18
20
DISCHARGE (L/sec)

FIGURE 82

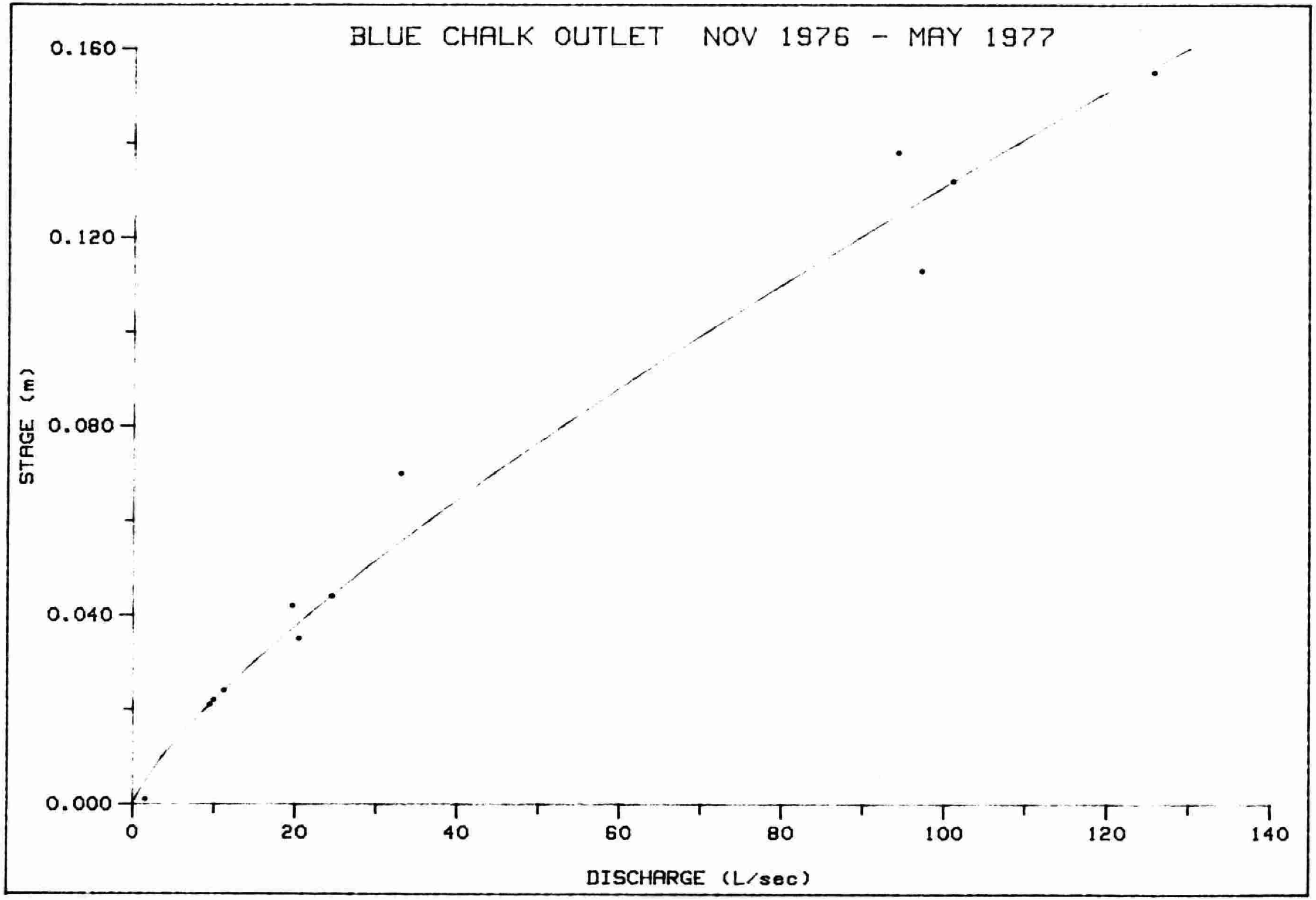

BLUE CHALK OUTLET NOV 1976 - MAY 1977
0.160
0.120
0.080
0.040
0.000
STAGE (m)
0
20
40
60
80
100
120
140
DISCHARGE (L/sec)

FIGURE 83

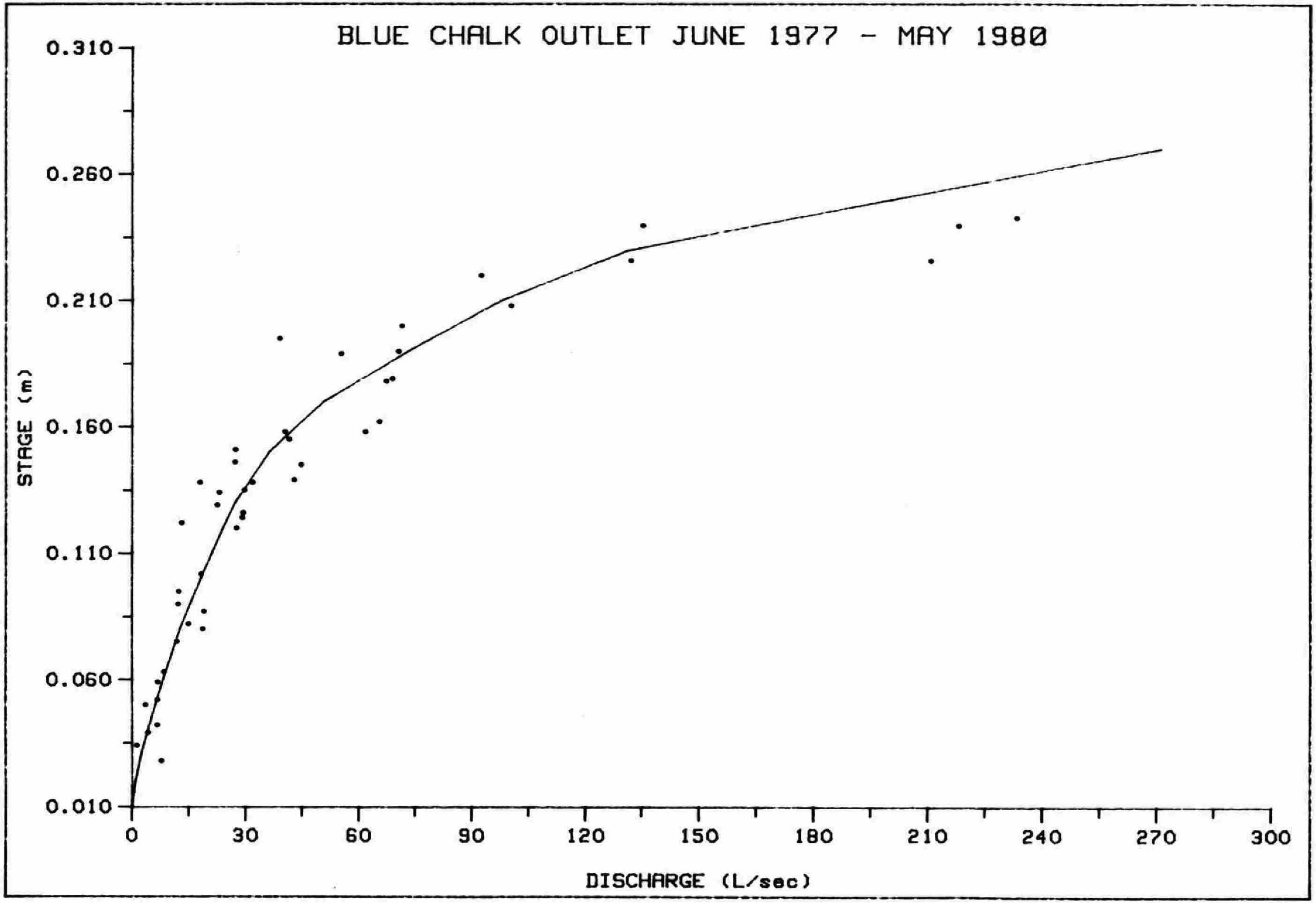

BLUE CHALK OUTLET JUNE 1977 - MAY 1980
STAGE (m)
0.310
0.260
0.210
0.160
0.110
0.060
0.010
0
30
60
90
120
150
180
210
240
270
300
DISCHARGE (L/sec)

FIGURE 84

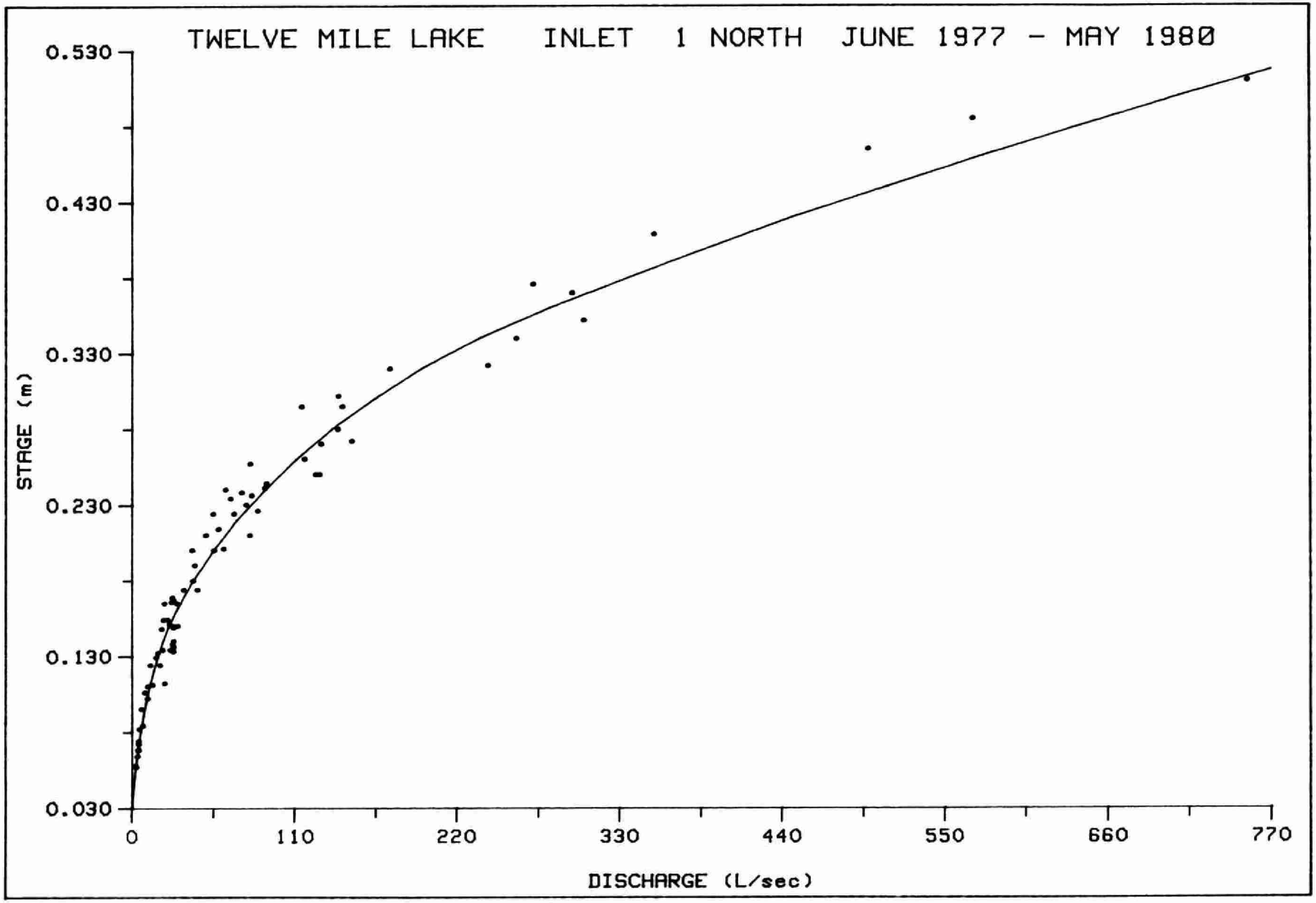

TWELVE MILE LAKE INLET 1 NORTH JUNE 1977 - MAY 1980
0.530
0.430
0.330
0.230
0.130
0.030
STAGE (m)
0
110
220
330
440
550
660
770
DISCHARGE (L/sec)

FIGURE 85

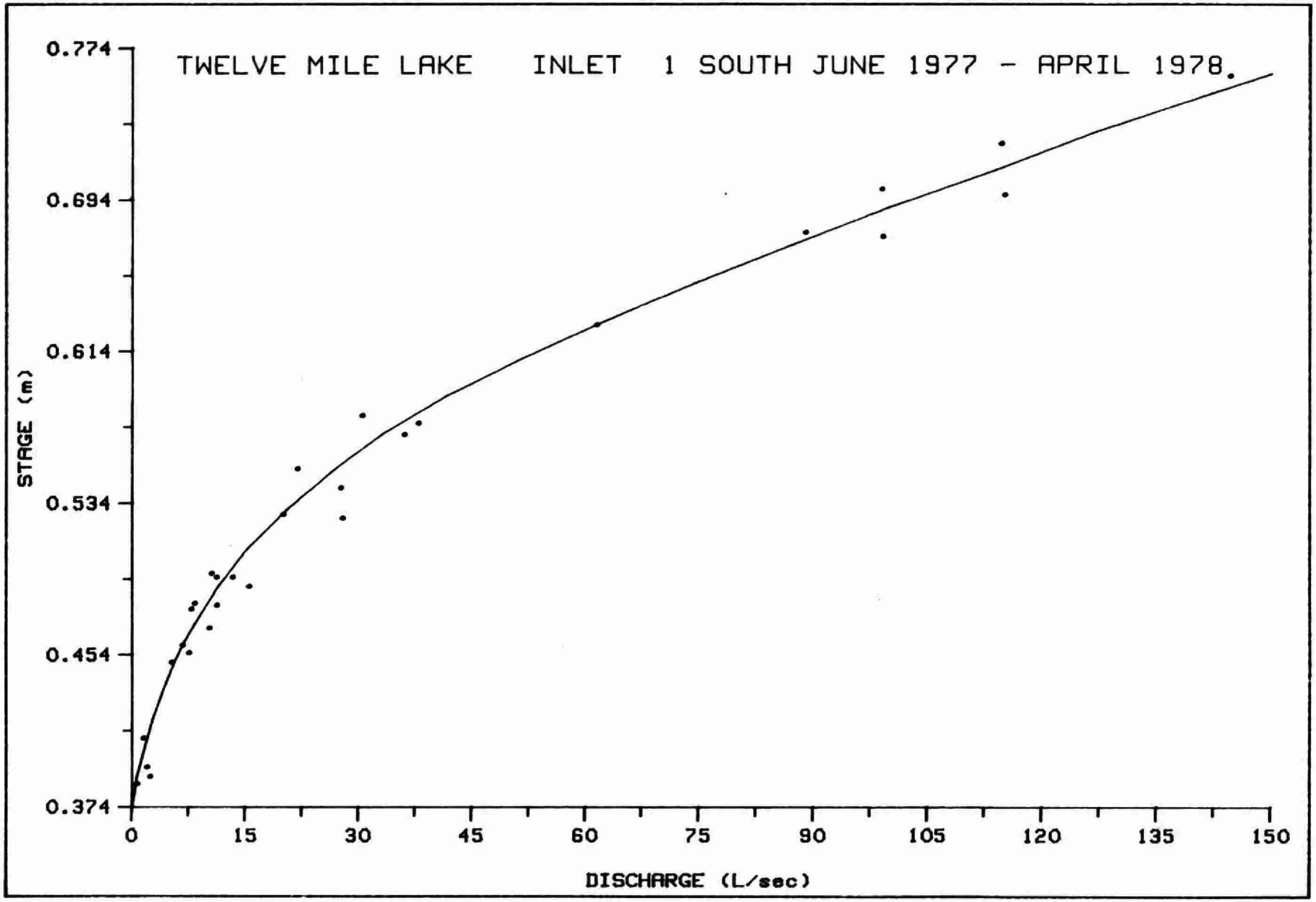

TWELVE MILE LAKE INLET 1 SOUTH JUNE 1977 - APRIL 1978
STAGE (m)
0.774
0.694
0.614
0.534
0.454
0.374
DISCHARGE (L/sec)
0
15
30
45
60
75
90
105
120
135
150

FIGURE 86

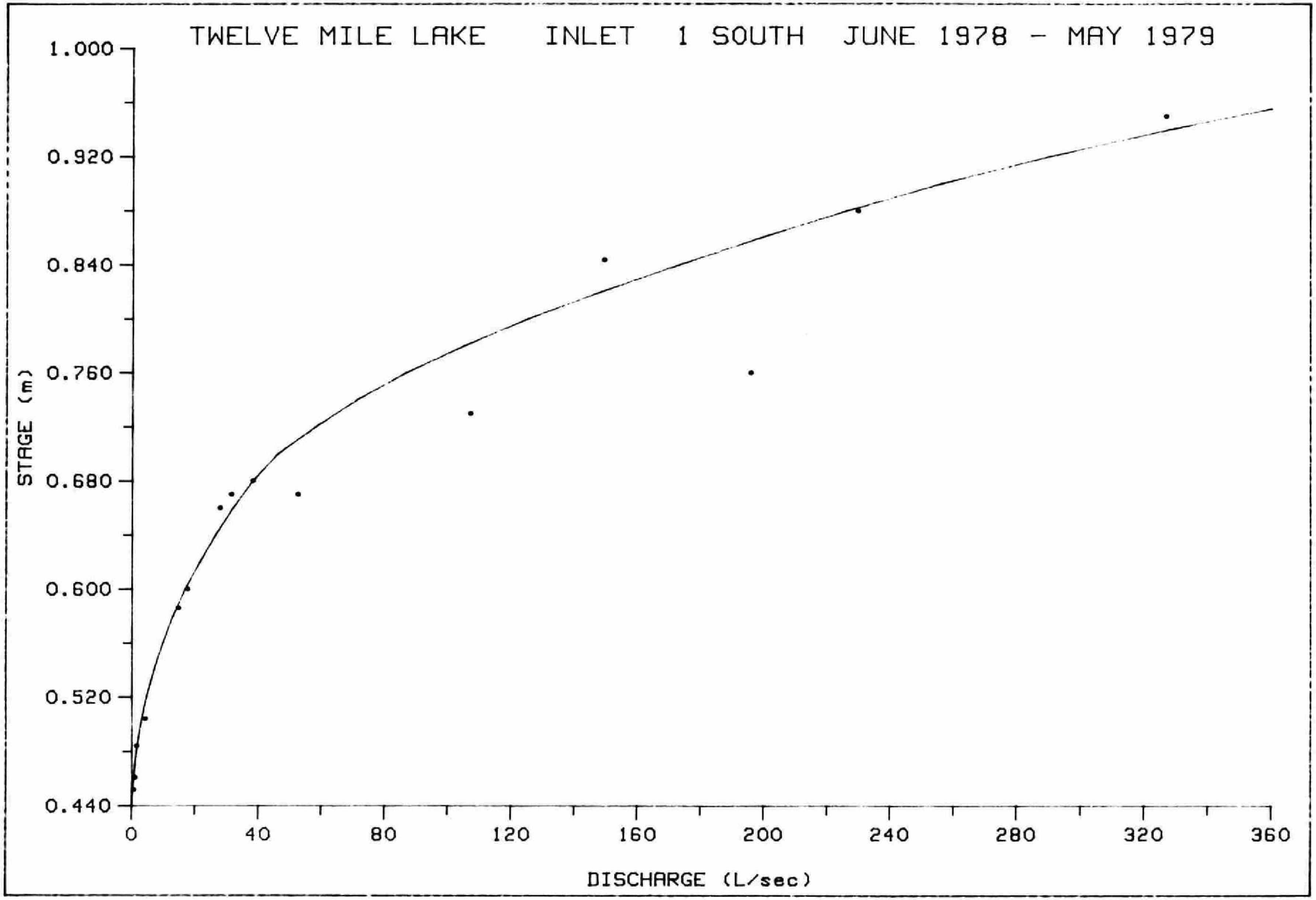

TWELVE MILE LAKE INLET 1 SOUTH JUNE 1978 - MAY 1979
STAGE (m)
1.000
0.920
0.840
0.760
0.680
0.600
0.520
0.440
0
40
80
120
160
200
240
280
320
360
DISCHARGE (L/sec)

FIGURE 87

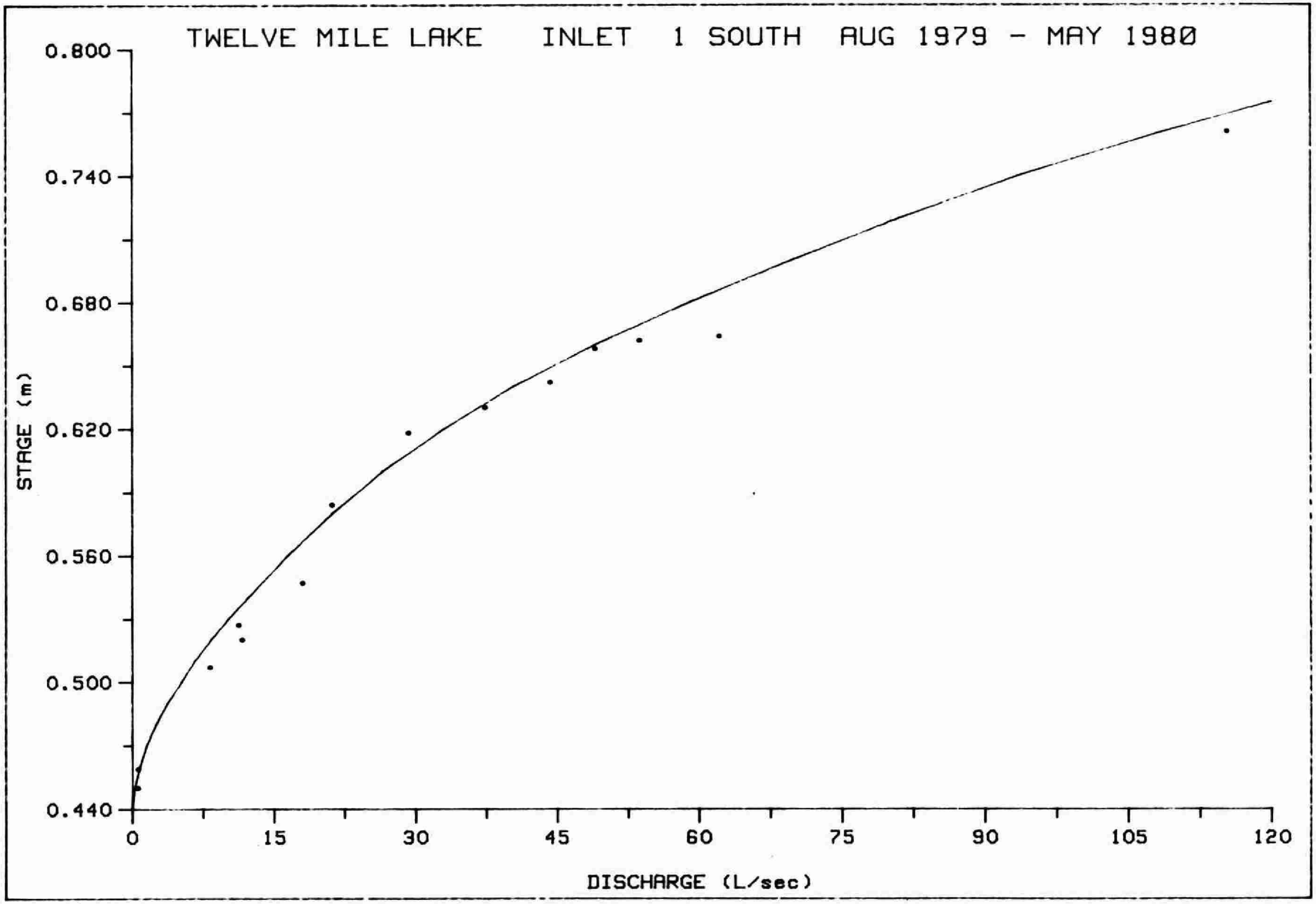

TWELVE MILE LAKE INLET 1 SOUTH AUG 1979 - MAY 1980
STAGE (m)
0.800
0.740
0.680
0.620
0.560
0.500
0.440
0
15
30
45
60
75
90
105
120
DISCHARGE (L/sec)

FIGURE 88

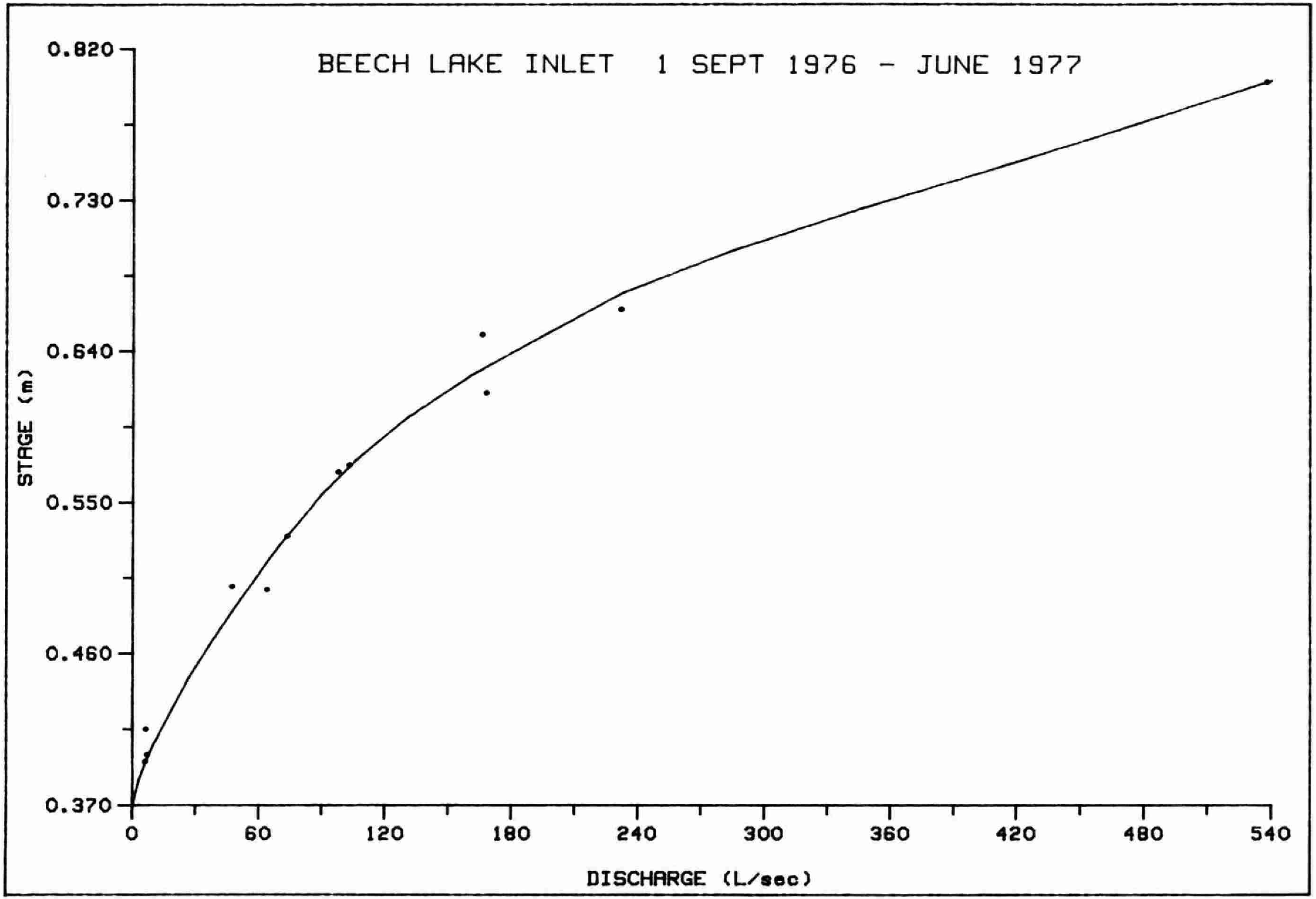

BEECH LAKE INLET 1 SEPT 1976 - JUNE 1977
STAGE (m)
0.820
0.730
0.640
0.550
0.460
0.370
0
60
120
180
240
300
360
420
480
540
DISCHARGE (L/sec)

FIGURE 89

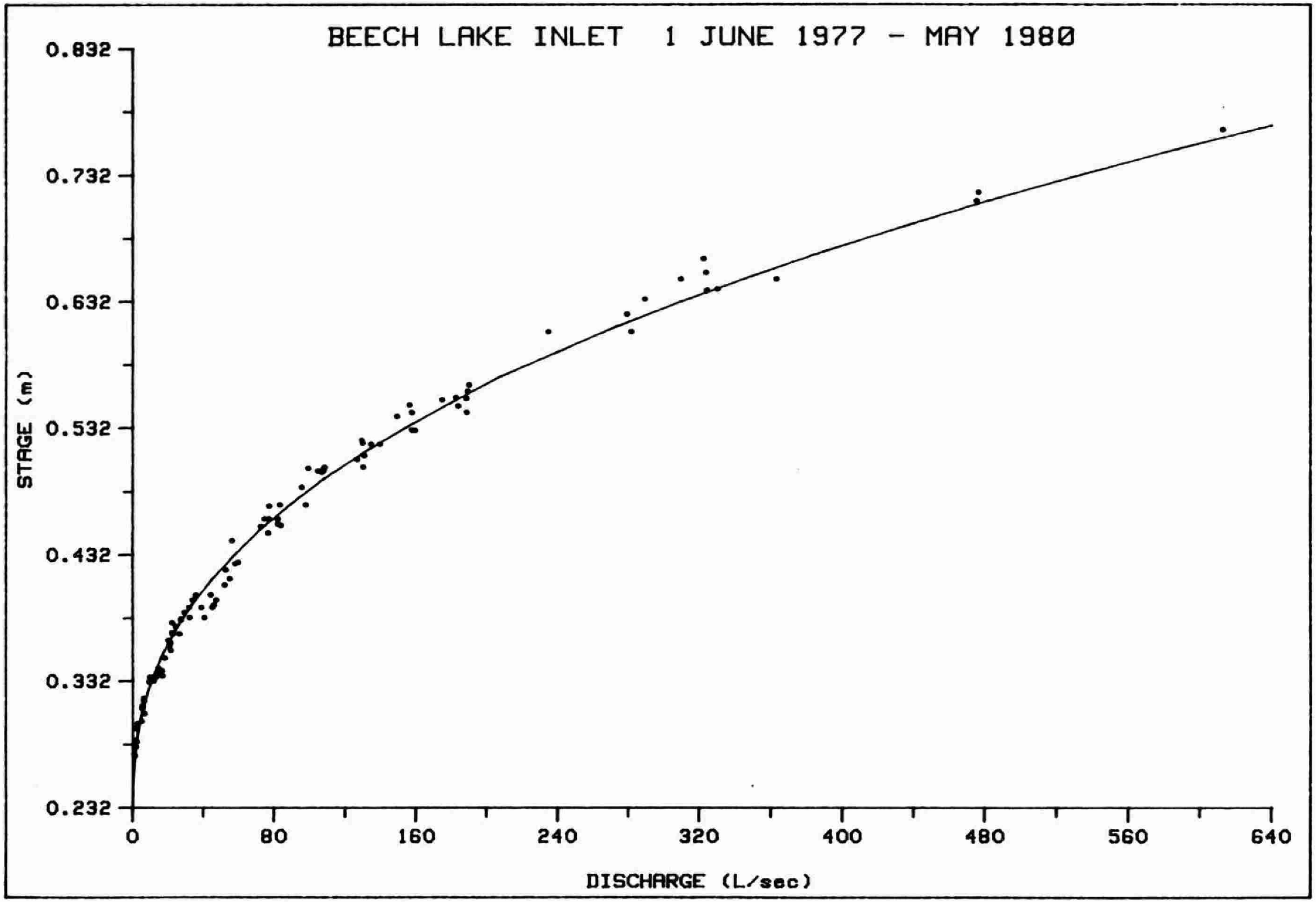

BEECH LAKE INLET 1 JUNE 1977 - MAY 1980
STAGE (m)
0.832
0.732
0.632
0.532
0.432
0.332
0.232
0
80
160
240
320
400
480
560
640
DISCHARGE (L/sec)

FIGURE 90

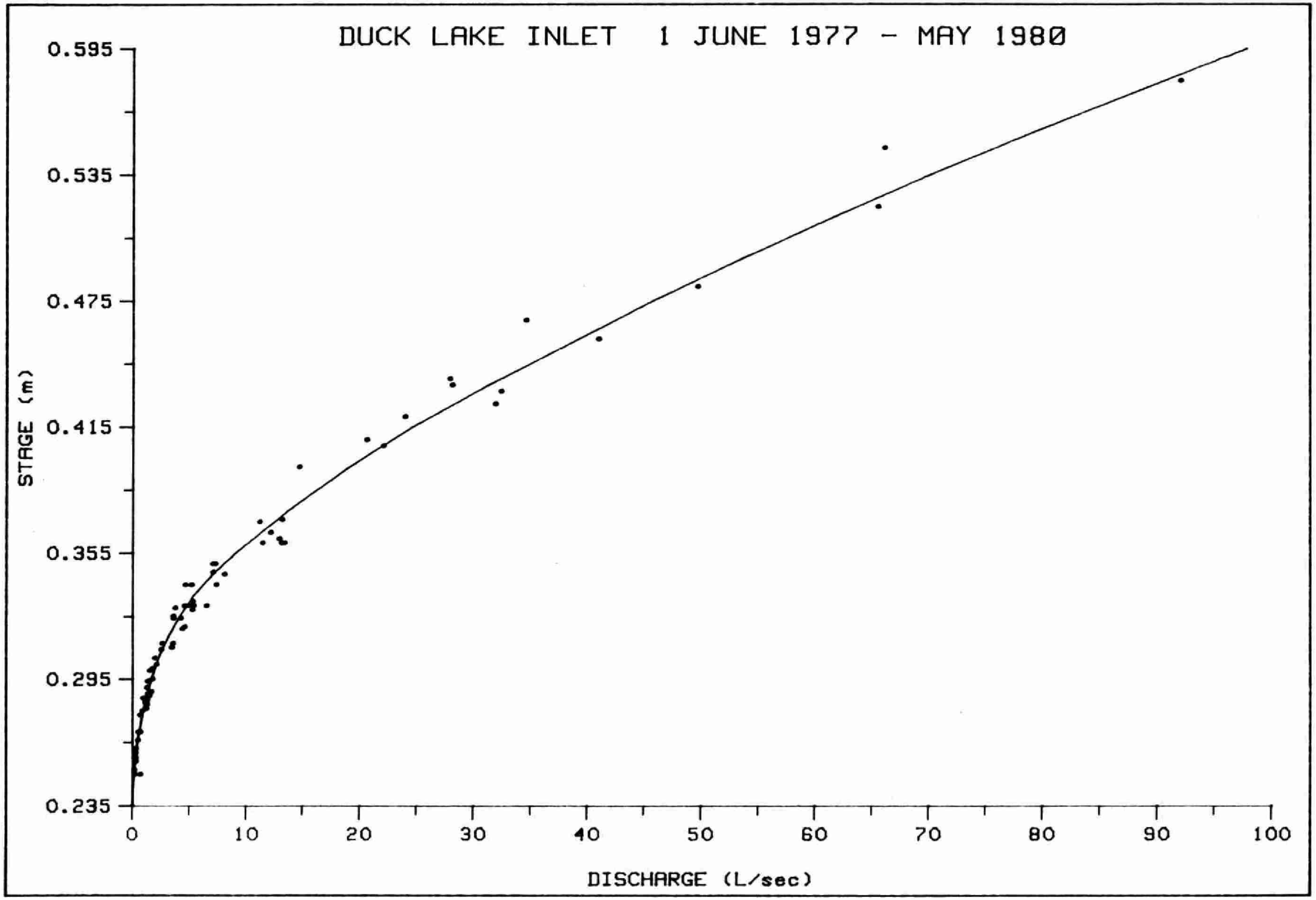
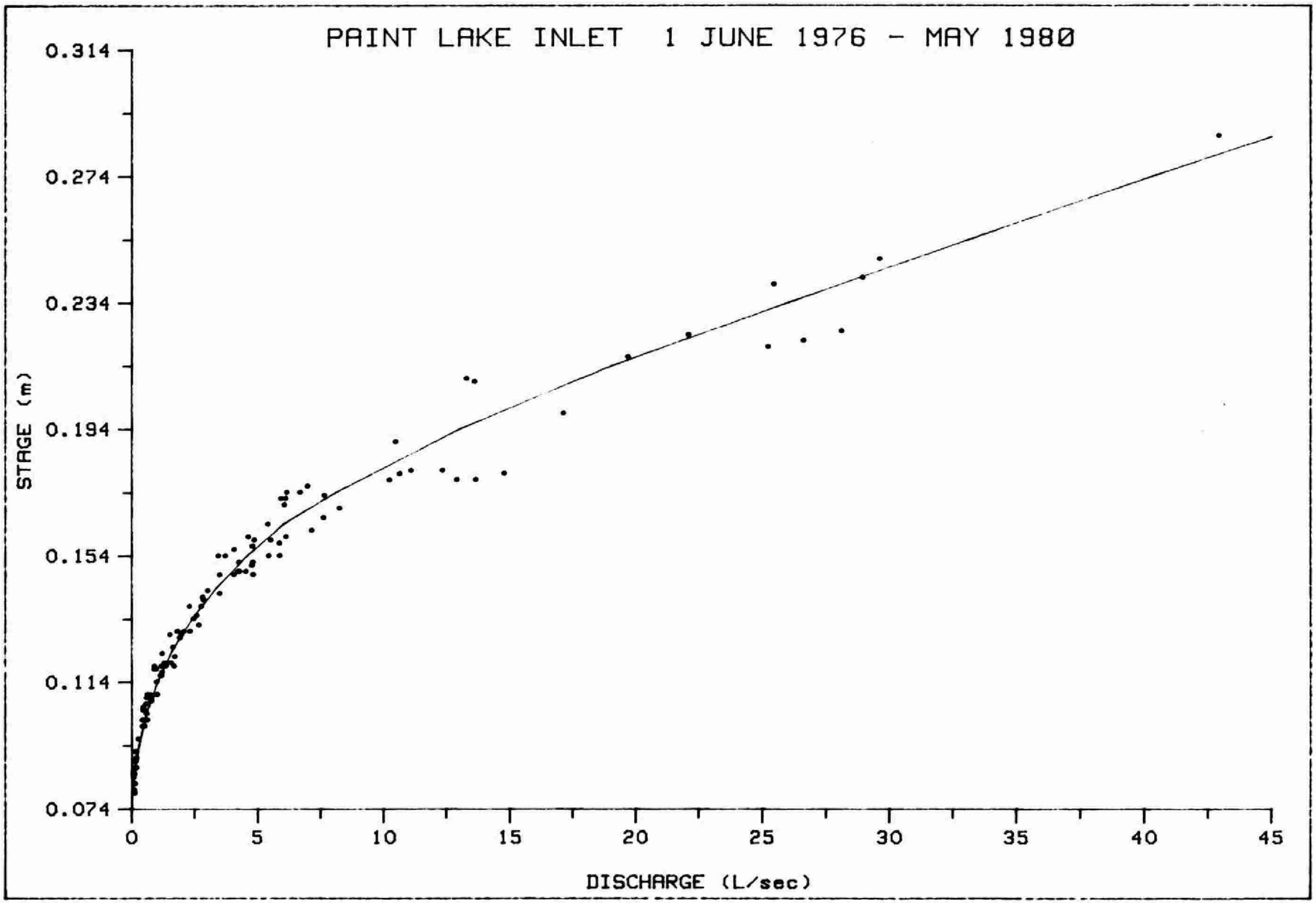
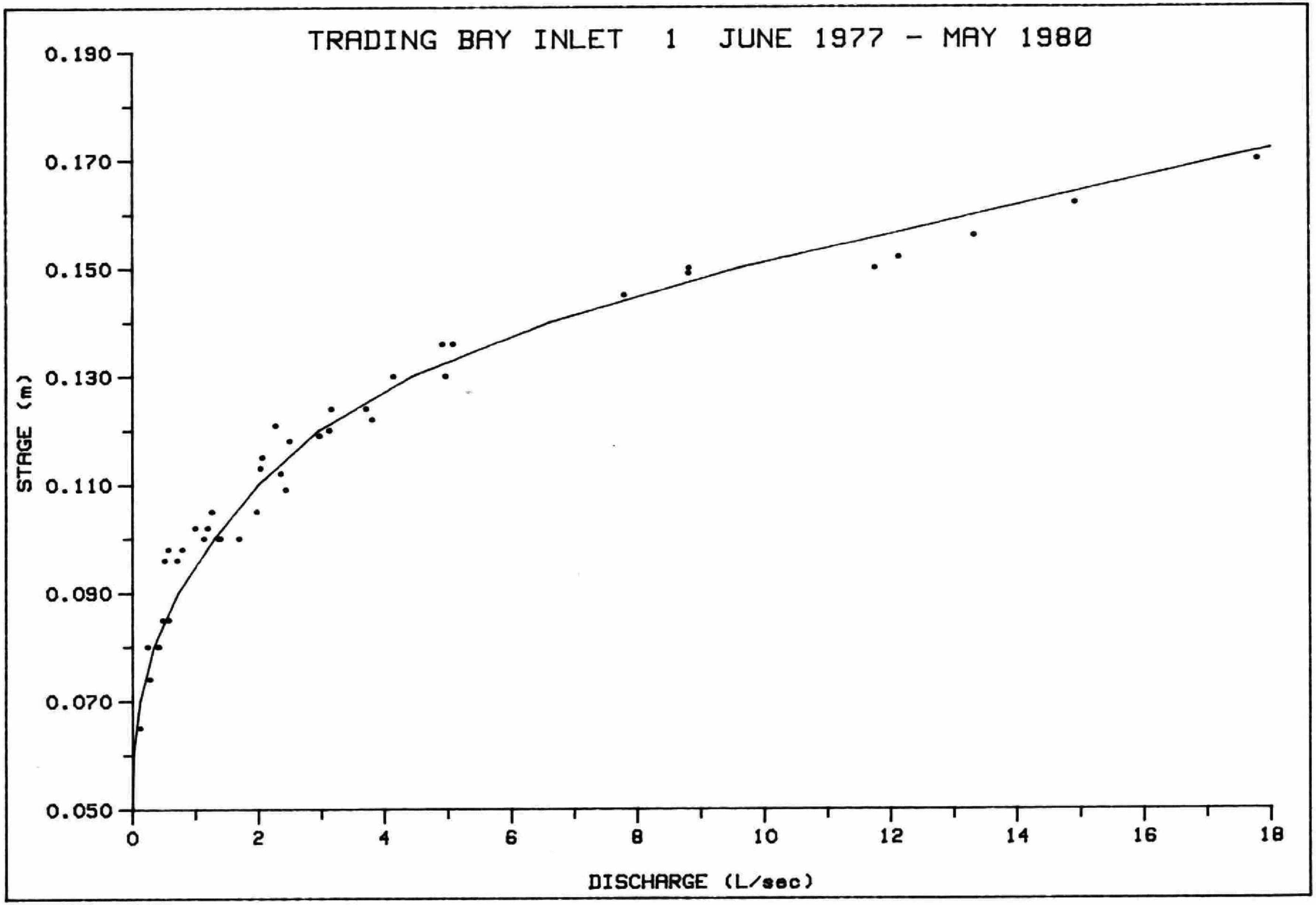

DUCK LAKE INLET 1 JUNE 1977 - MAY 1980
STAGE (m)
0.595
0.535
0.475
0.415
0.355
0.295
0.235
0
10
20
30
40
50
60
70
80
90
100
DISCHARGE (L/sec)

FIGURE 91



PAINT LAKE INLET 1 JUNE 1976 - MAY 1980
STAGE (m)
0.314
0.274
0.234
0.194
0.154
0.114
0.074
0
5
10
15
20
25
30
35
40
45
DISCHARGE (L/sec)

FIGURE 92



TRADING BAY INLET 1 JUNE 1977 - MAY 1980
STAGE (m)
0.190
0.170
0.150
0.130
0.110
0.090
0.070
0.050
0
2
4
6
8
10
12
14
16
18
DISCHARGE (L/sec)

FIGURE 93

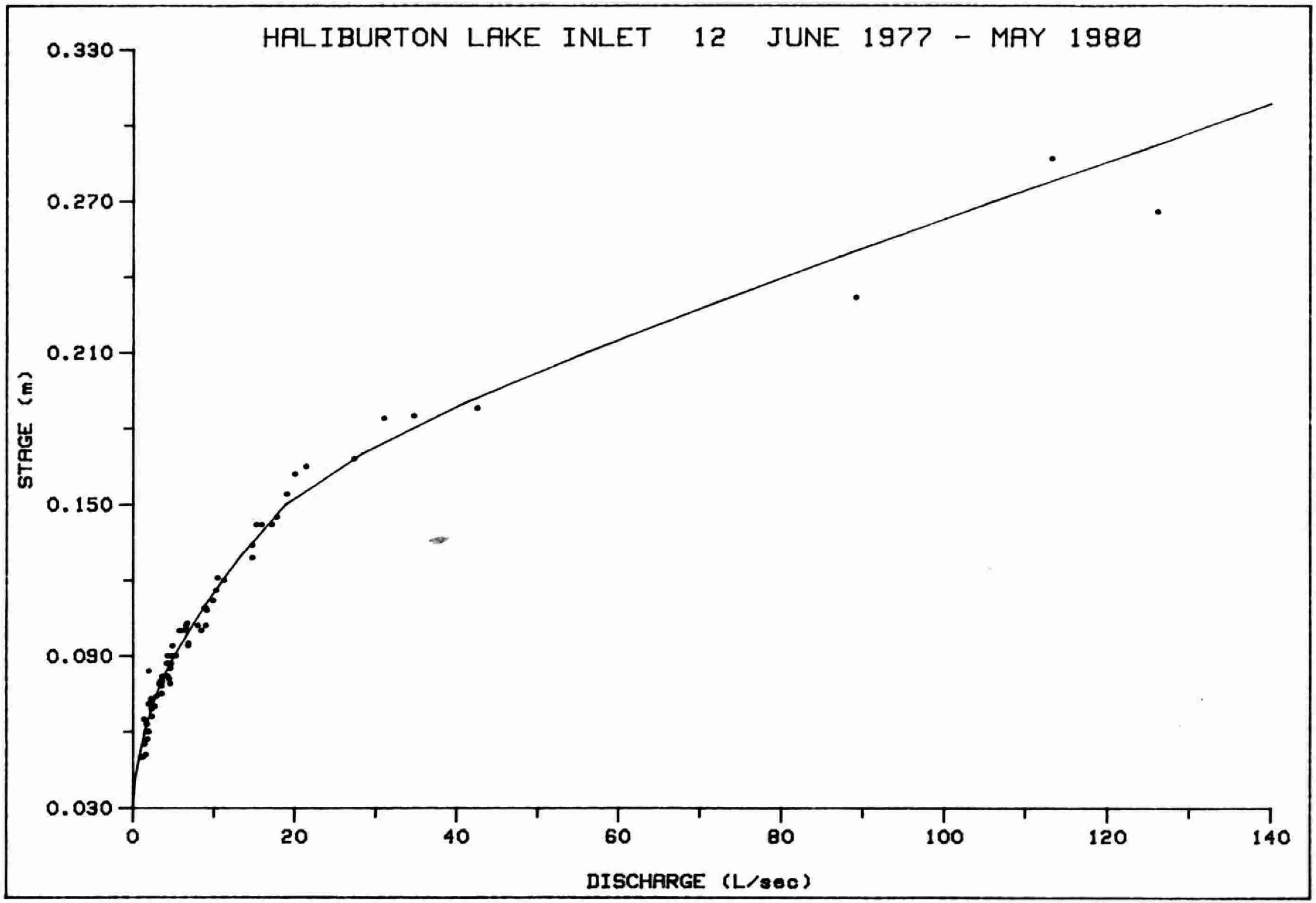

HALIBURTON LAKE INLET 12 JUNE 1977 - MAY 1980
0.330
0.270
0.210
0.150
0.090
0.030
STAGE (m)
0
20
40
60
80
100
120
140
DISCHARGE (L/sec)

FIGURE 94

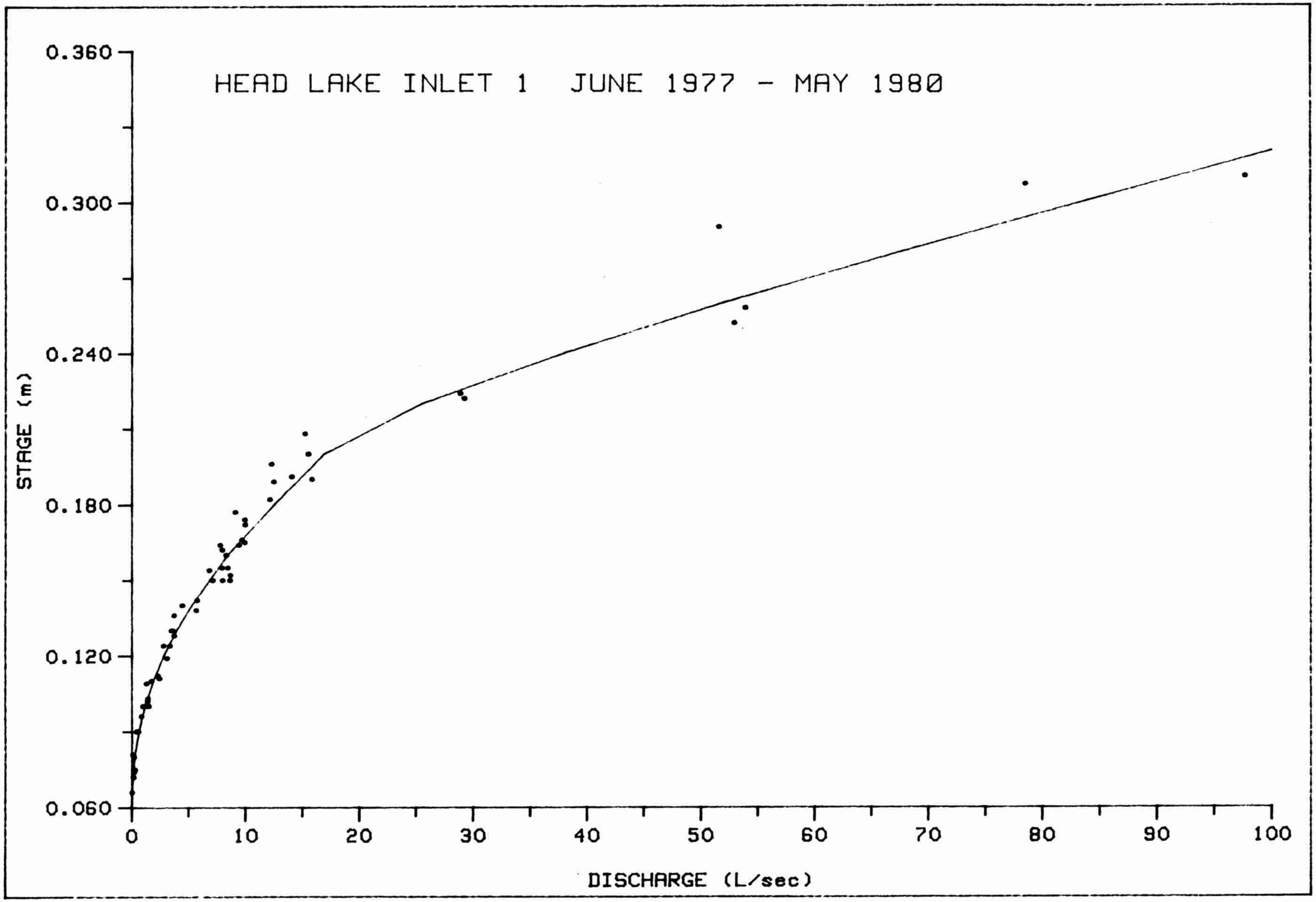

HEAD LAKE INLET 1 JUNE 1977 - MAY 1980
STAGE (m)
0.360
0.300
0.240
0.180
0.120
0.060
0
10
20
30
40
50
60
70
80
90
100
DISCHARGE (L/sec)

FIGURE 95

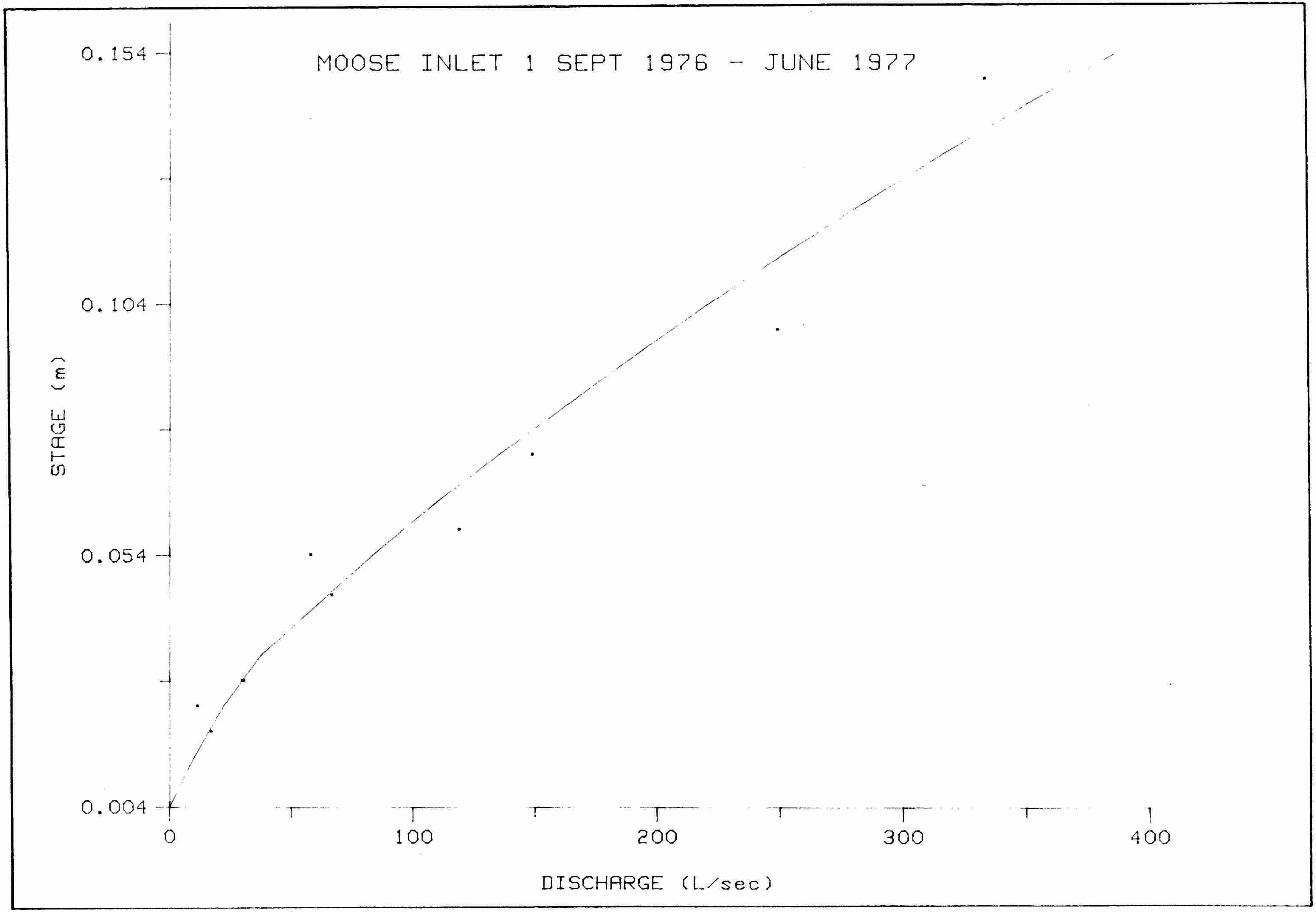
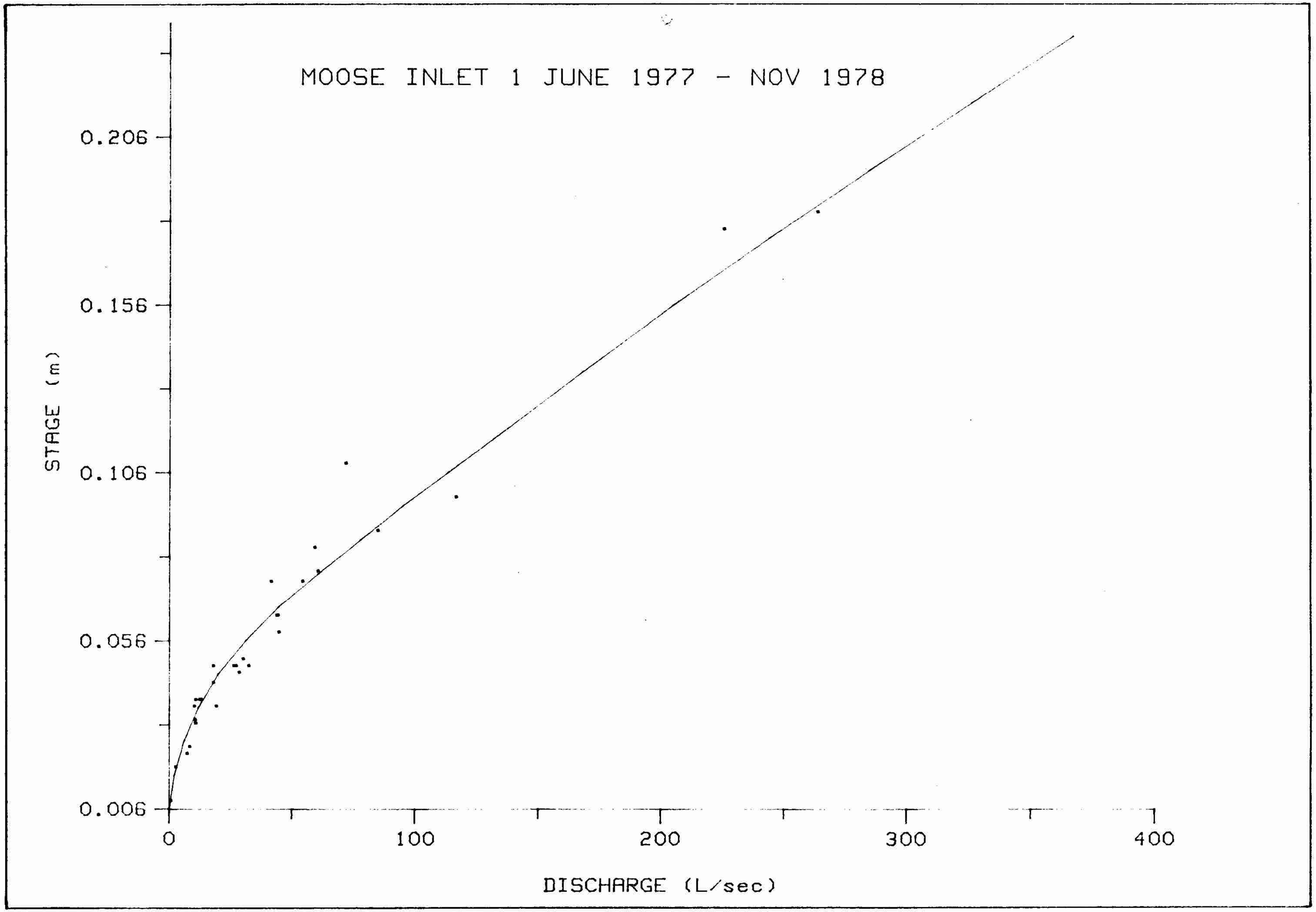

MOOSE INLET 1 SEPT 1976 - JUNE 1977
0.154
0.104
0.054
0.004
STAGE (m)
0
100
200
300
400
DISCHARGE (L/sec)

FIGURE 96



MOOSE INLET 1 JUNE 1977 - NOV 1978
STAGE (m)
0.206
0.156
0.106
0.056
0.006
0
100
200
300
400
DISCHARGE (L/sec)

FIGURE 97

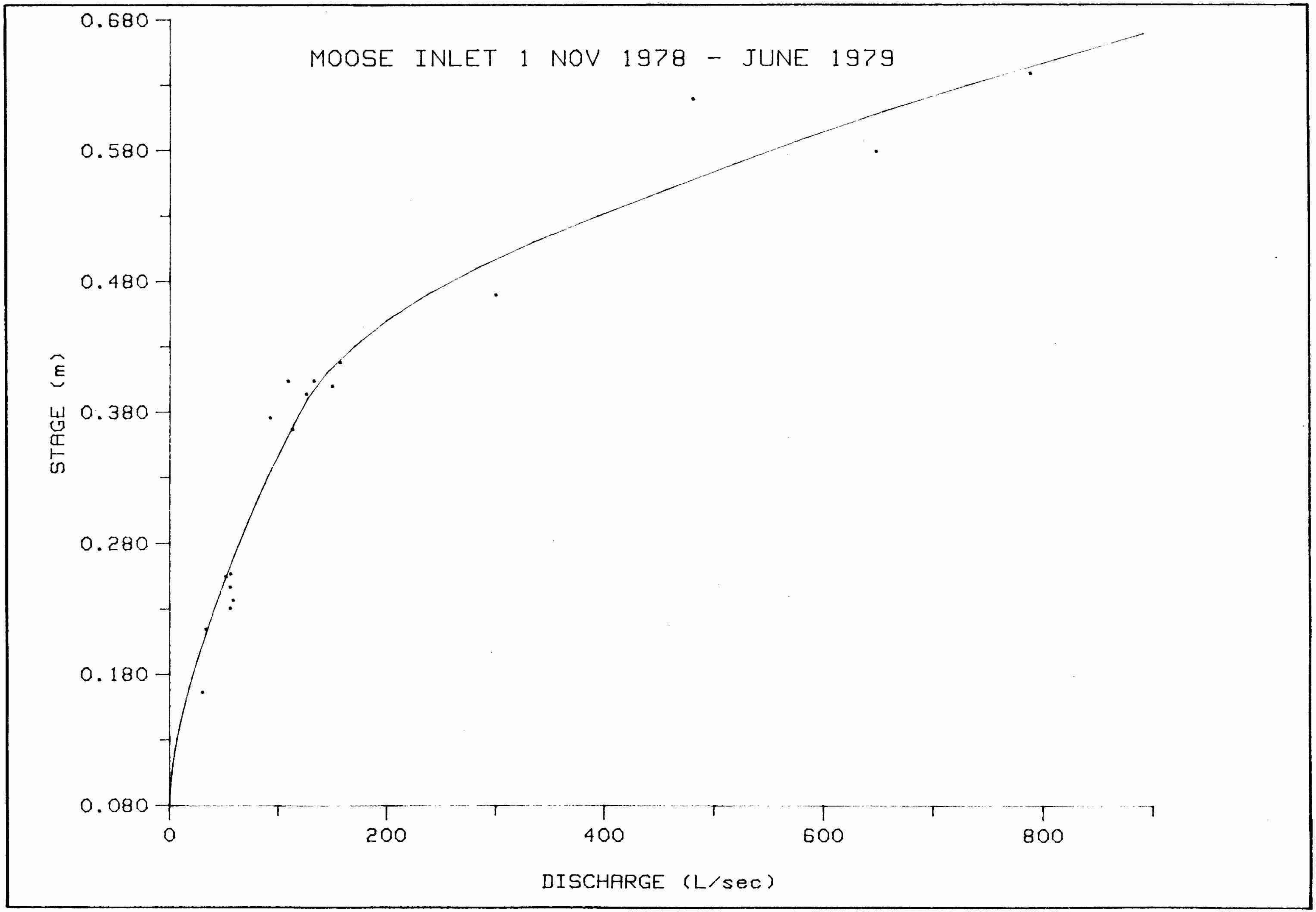

MOOSE INLET 1 NOV 1978 - JUNE 1979
0.680
0.580
0.480
0.380
0.280
0.180
0.080
STAGE (m)
0
200
400
600
800
DISCHARGE (L/sec)

FIGURE 98

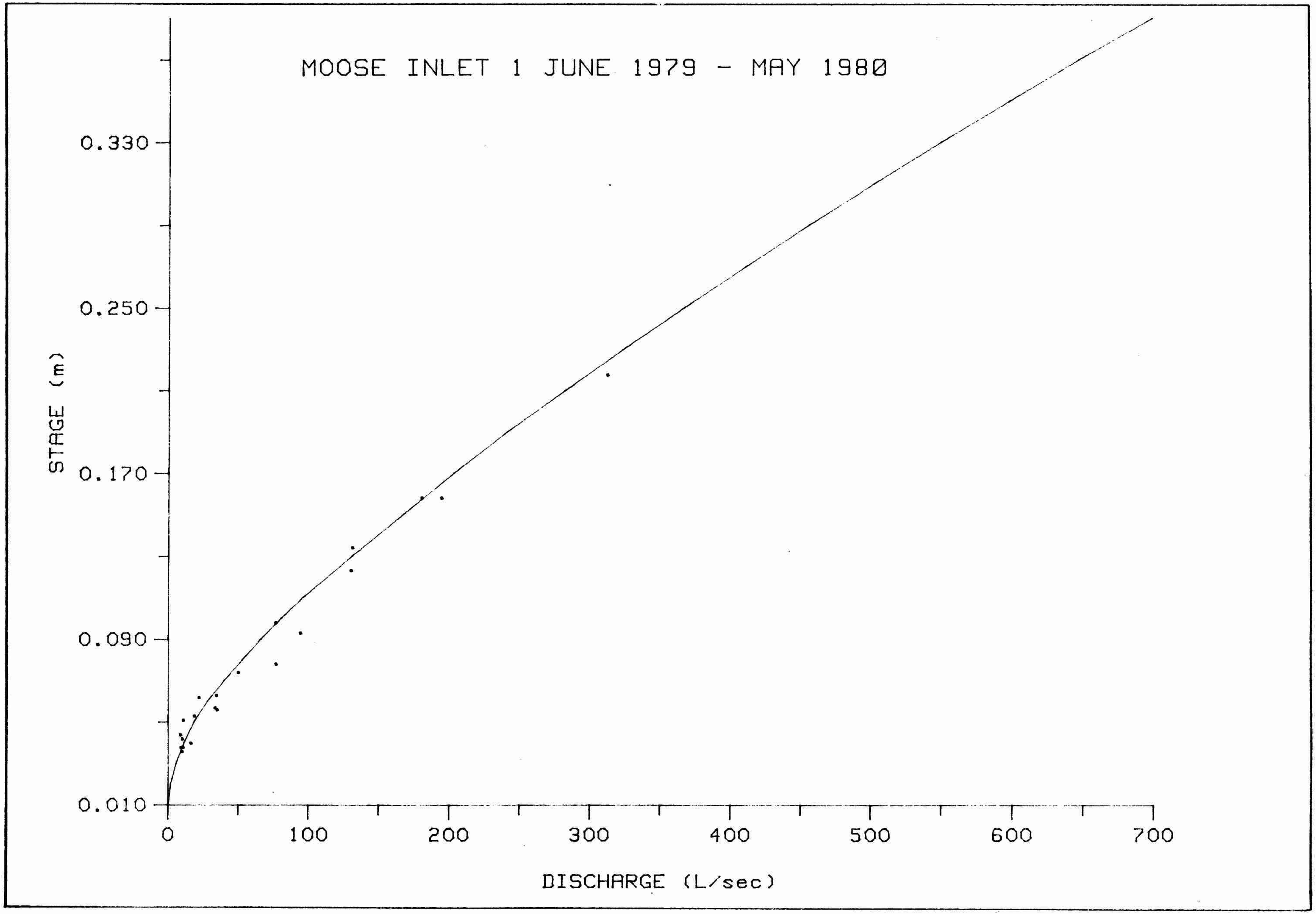

MOOSE INLET 1 JUNE 1979 - MAY 1980
0.330
0.250
0.170
0.090
0.010
STAGE (m)
0
100
200
300
400
500
600
700
DISCHARGE (L/sec)

FIGURE 99

FIGURE 100

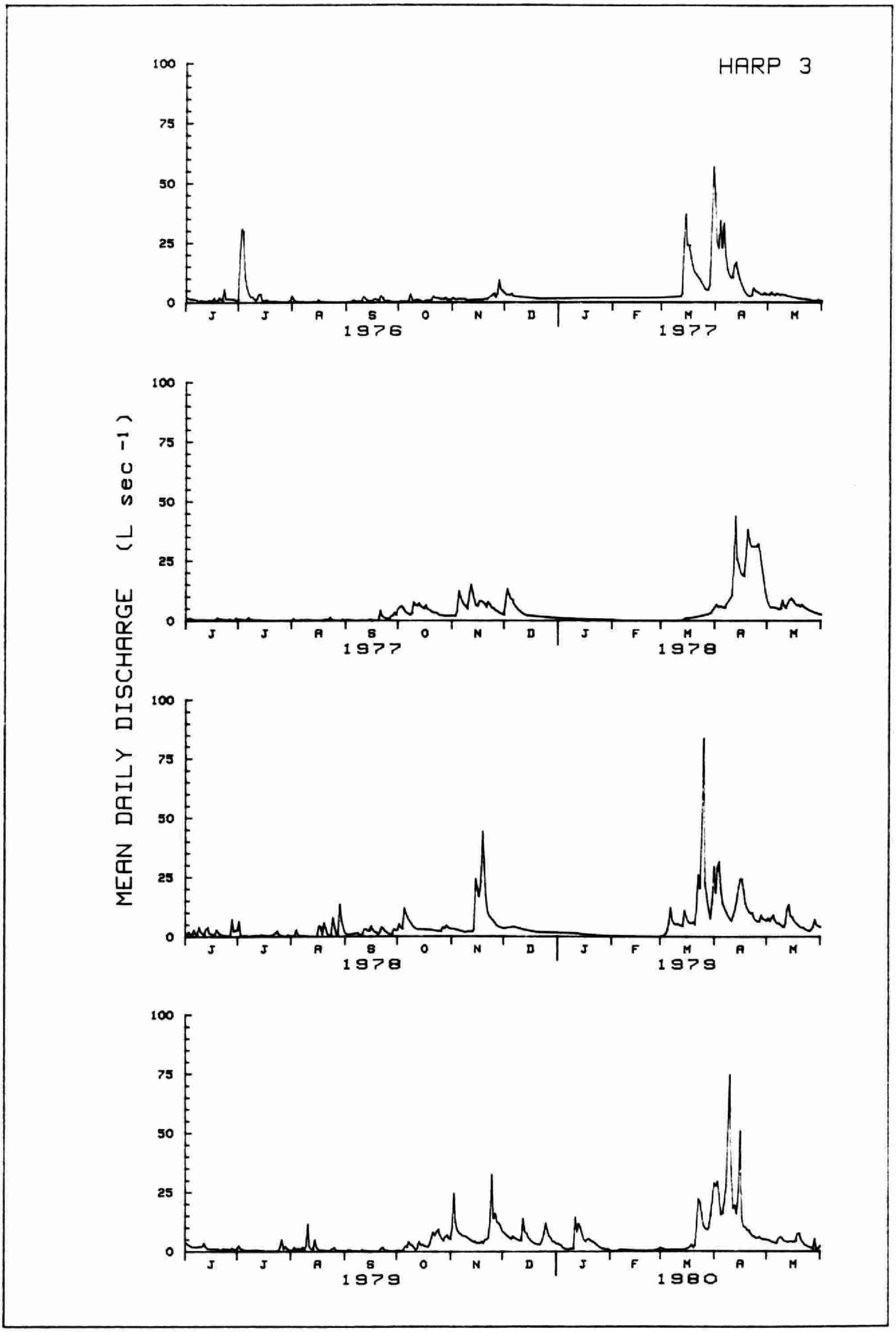

HARP 3
MEAN DAILY DISCHARGE (L sec -1)
100
75
50
25
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 101

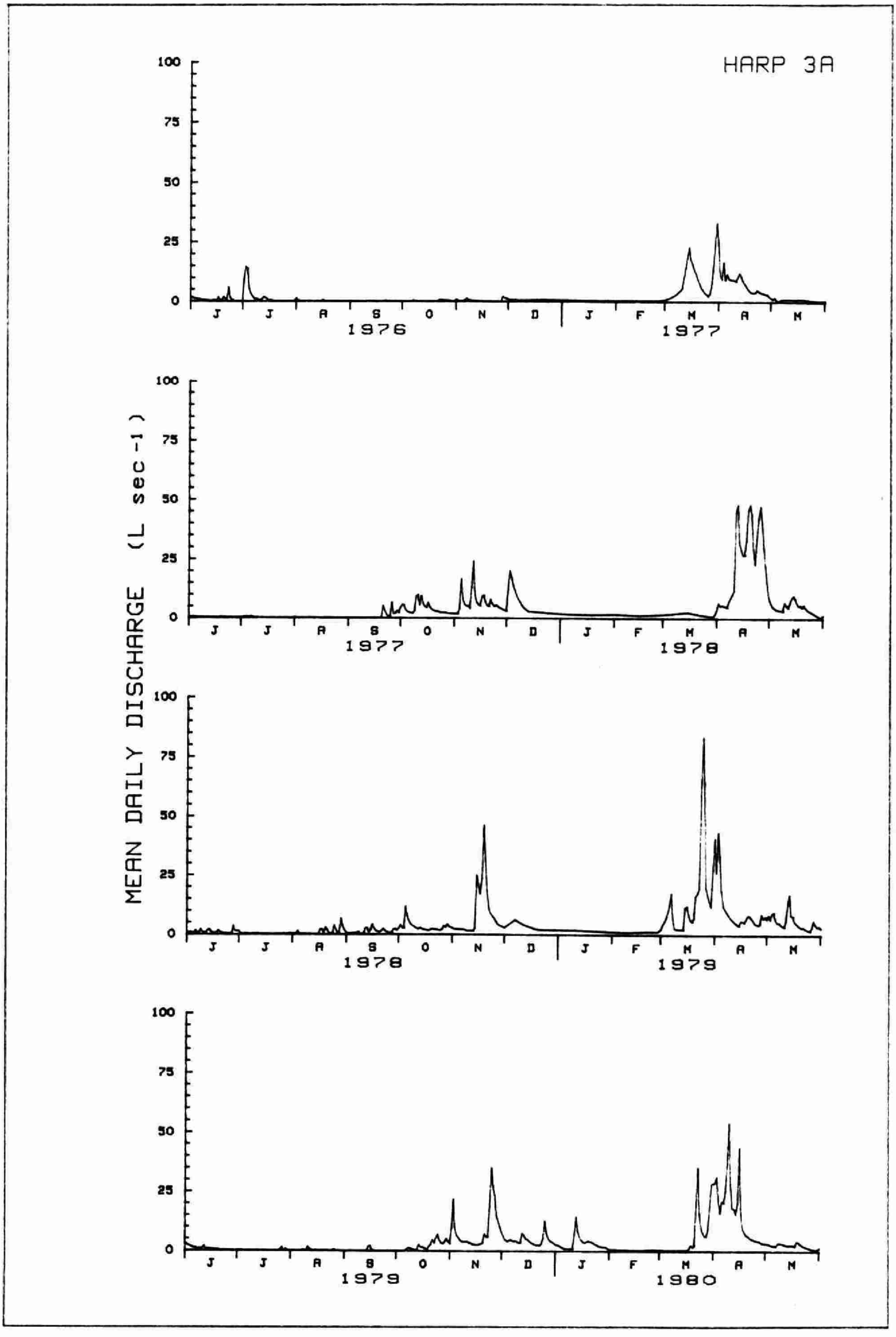

HARP 3A
MEAN DAILY DISCHARGE (L sec-1)
100
75
50
25
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 102

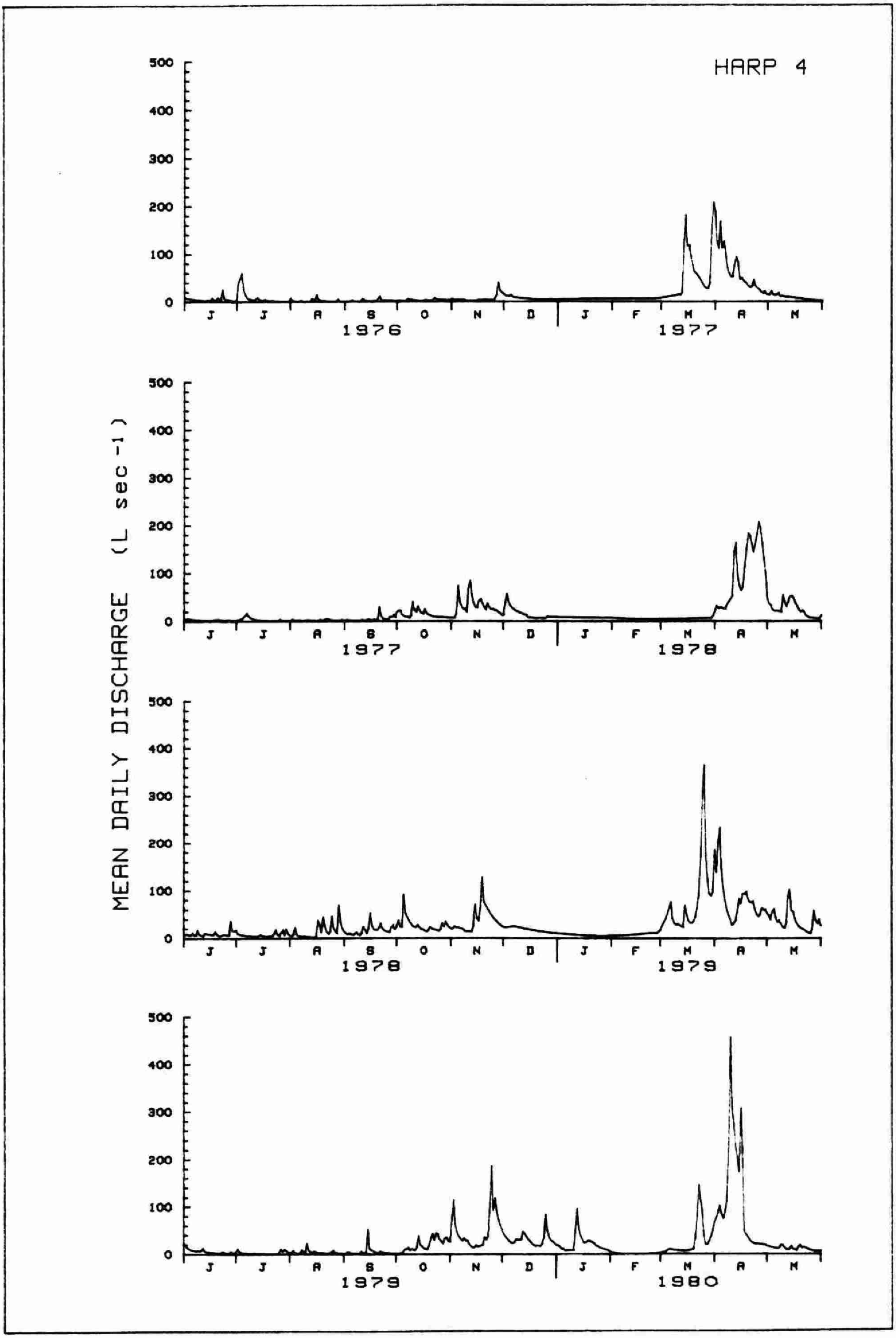

HARP 4
MEAN DAILY DISCHARGE (L sec -1)
500
400
300
200
100
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 103

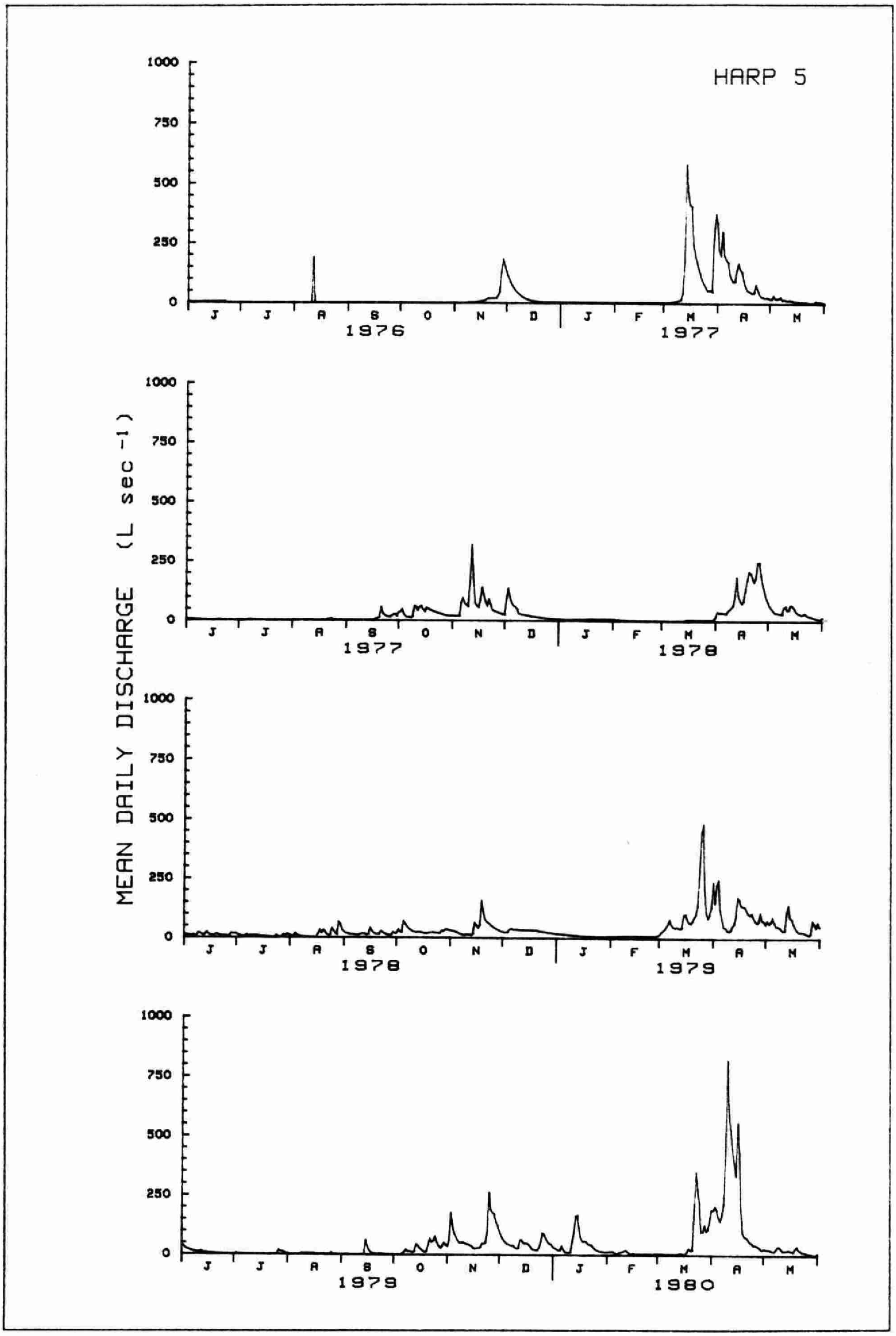

HARP 5
MEAN DAILY DISCHARGE (L sec -1)
1000
750
500
250
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 104

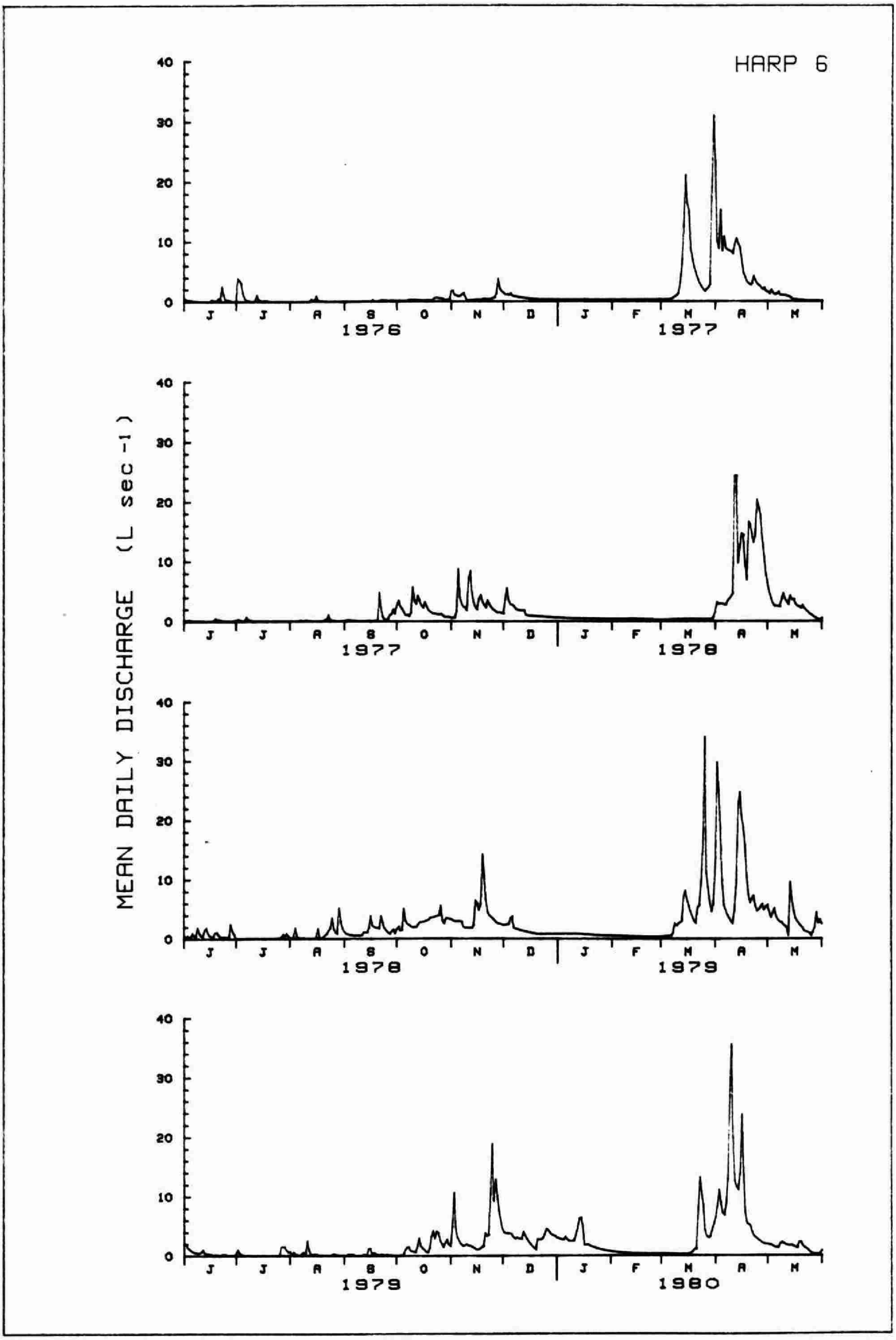

HARP 6
MEAN DAILY DISCHARGE (L sec -1)
40
30
20
10
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 105

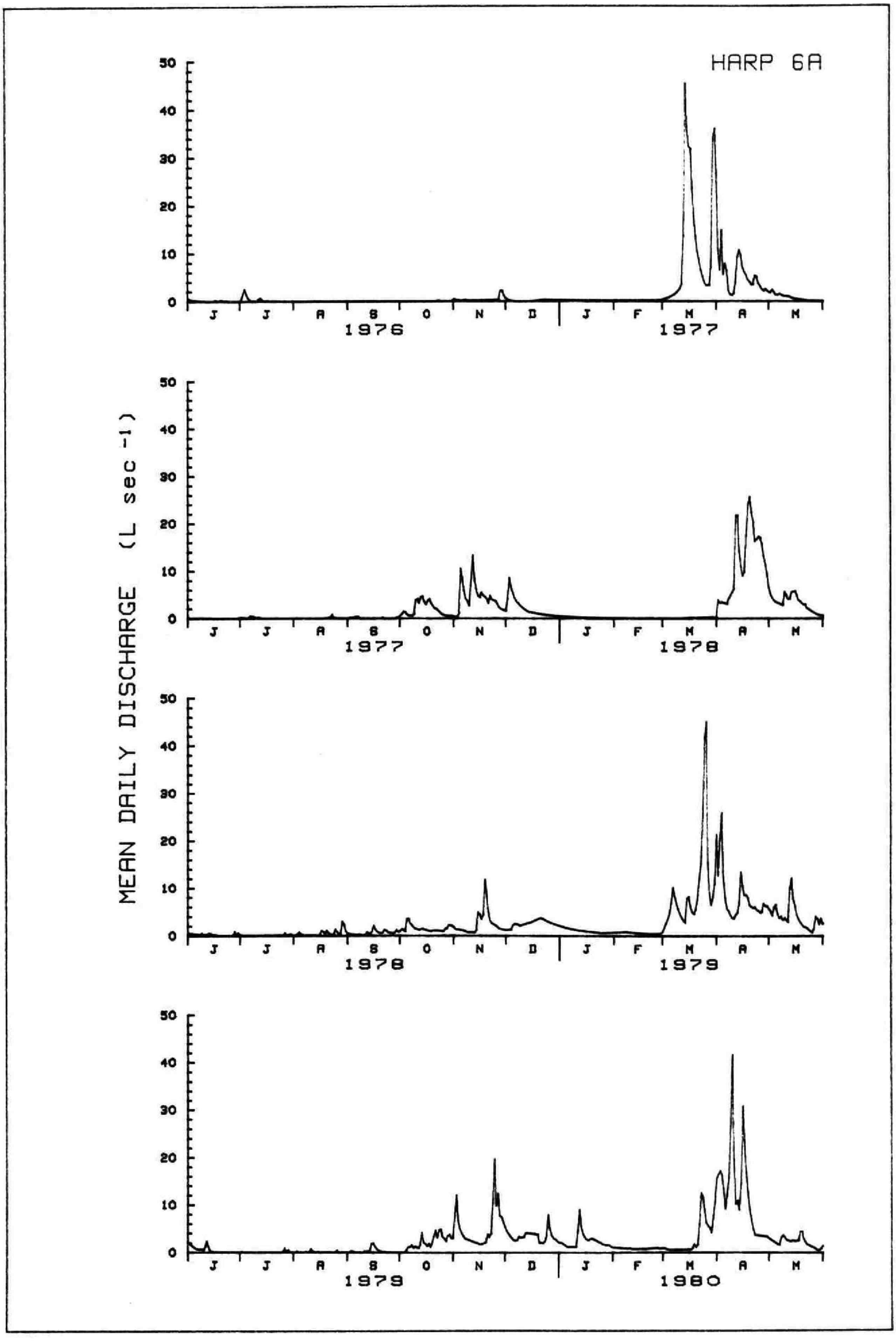

HARP 6A
MEAN DAILY DISCHARGE (L sec -1)
50
40
30
20
10
0
J J A S O N D J F M A M
1976 1977
1977 1978
1978 1979
1979 1980

FIGURE 106

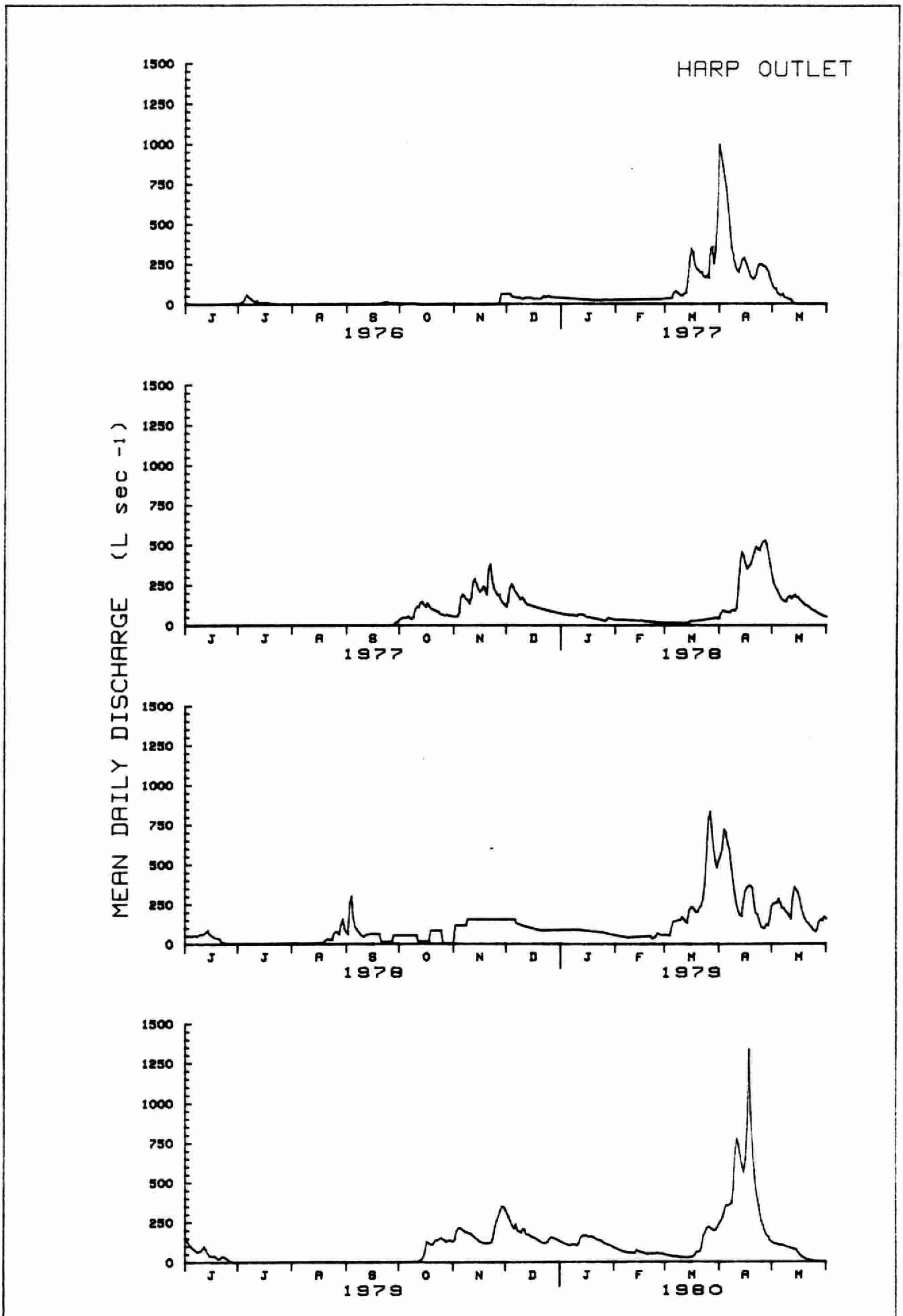
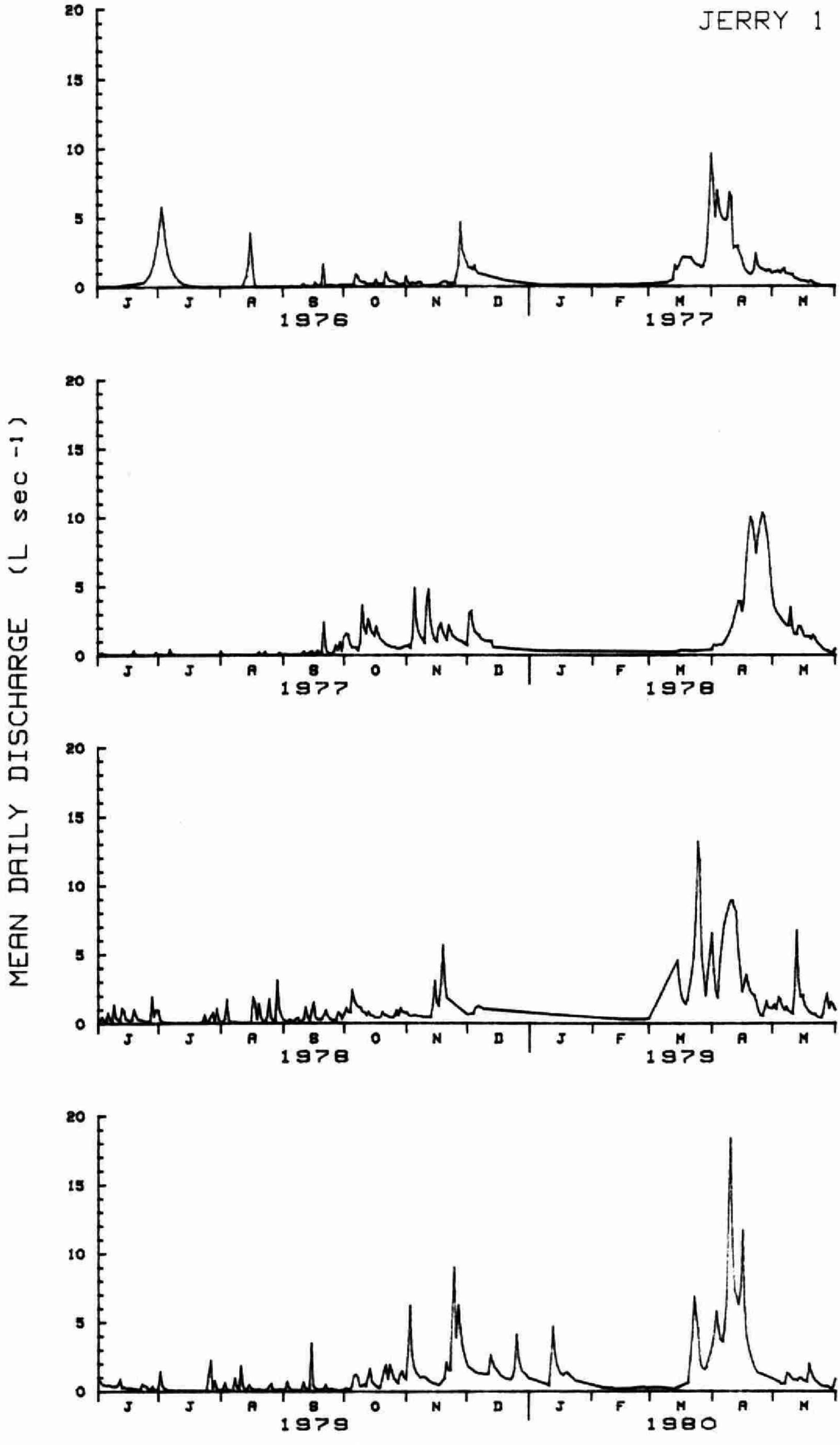

HARP OUTLET
MEAN DAILY DISCHARGE (L sec -1)
1500
1250
1000
750
500
250
0
J J A S O N D J F M A M
1976 1977
1977 1978
1978 1979
1979 1980

FIGURE 107



JERRY 1
MEAN DAILY DISCHARGE (L sec -1)
20
15
10
5
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 108

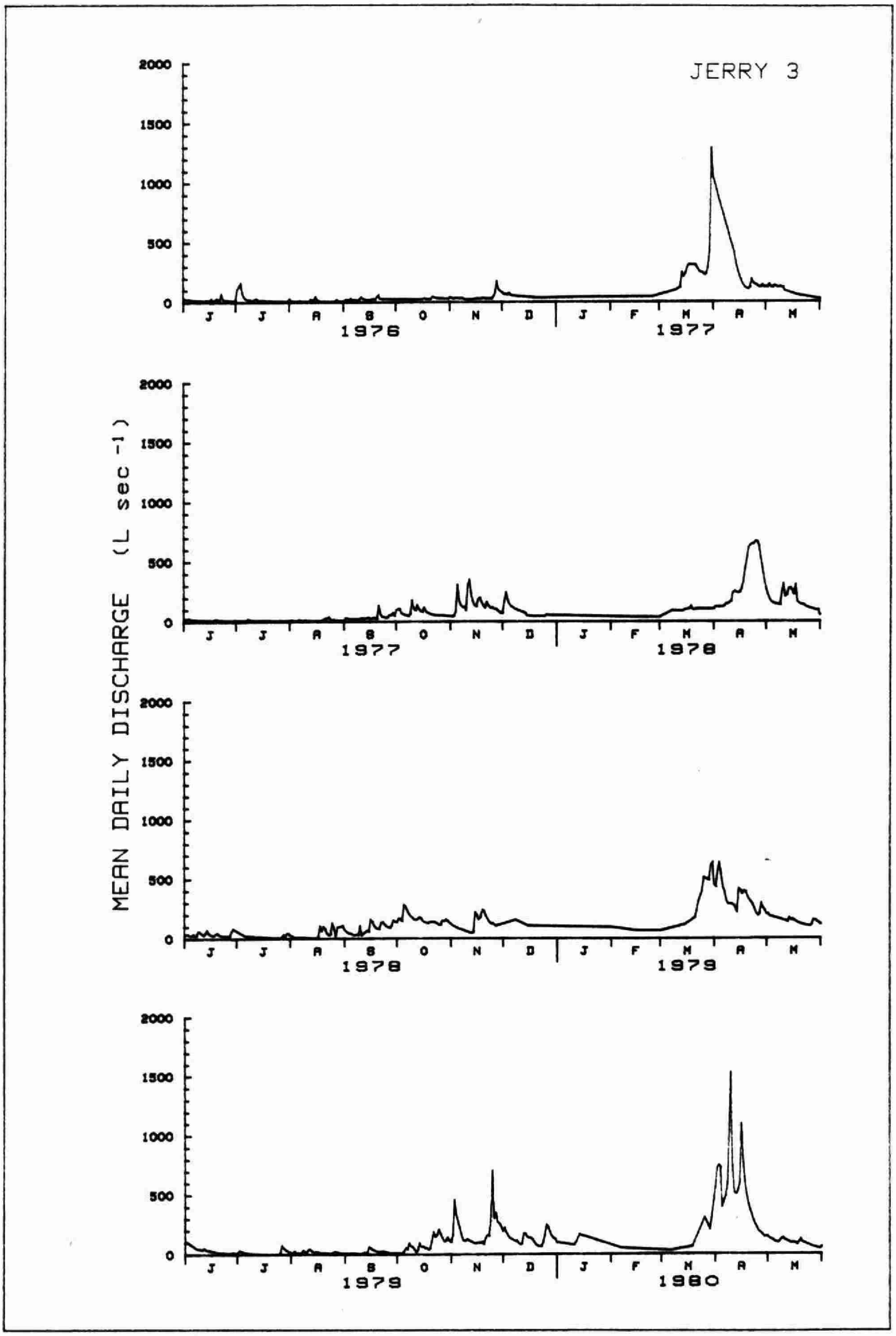

JERRY 3
MEAN DAILY DISCHARGE (L sec -1)
2000
1500
1000
500
0
J J A S O N D J F M A M
1976 1977
1977 1978
1978 1979
1979 1980

FIGURE 109

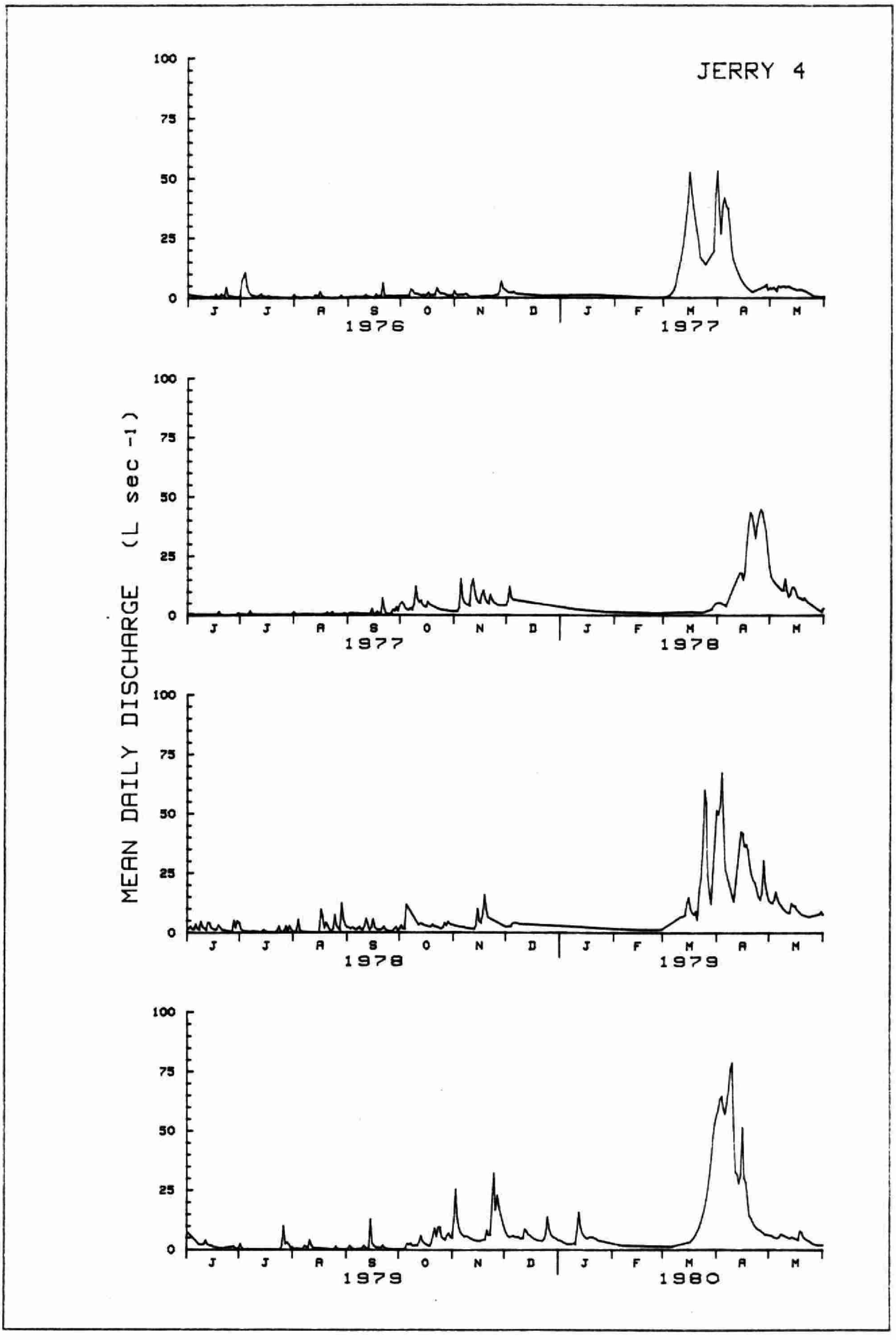

JERRY 4
MEAN DAILY DISCHARGE (L sec -1)
100
75
50
25
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 110

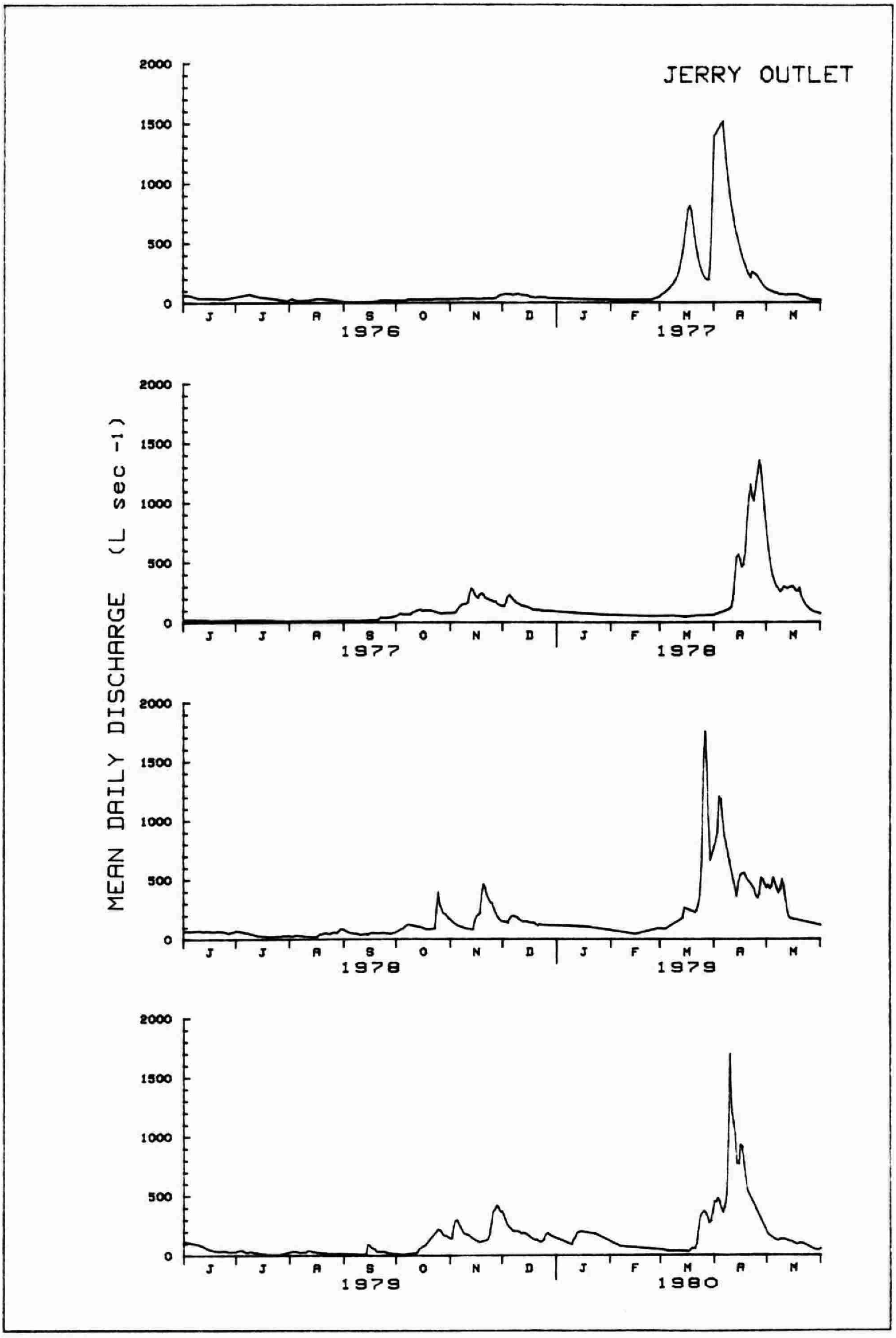
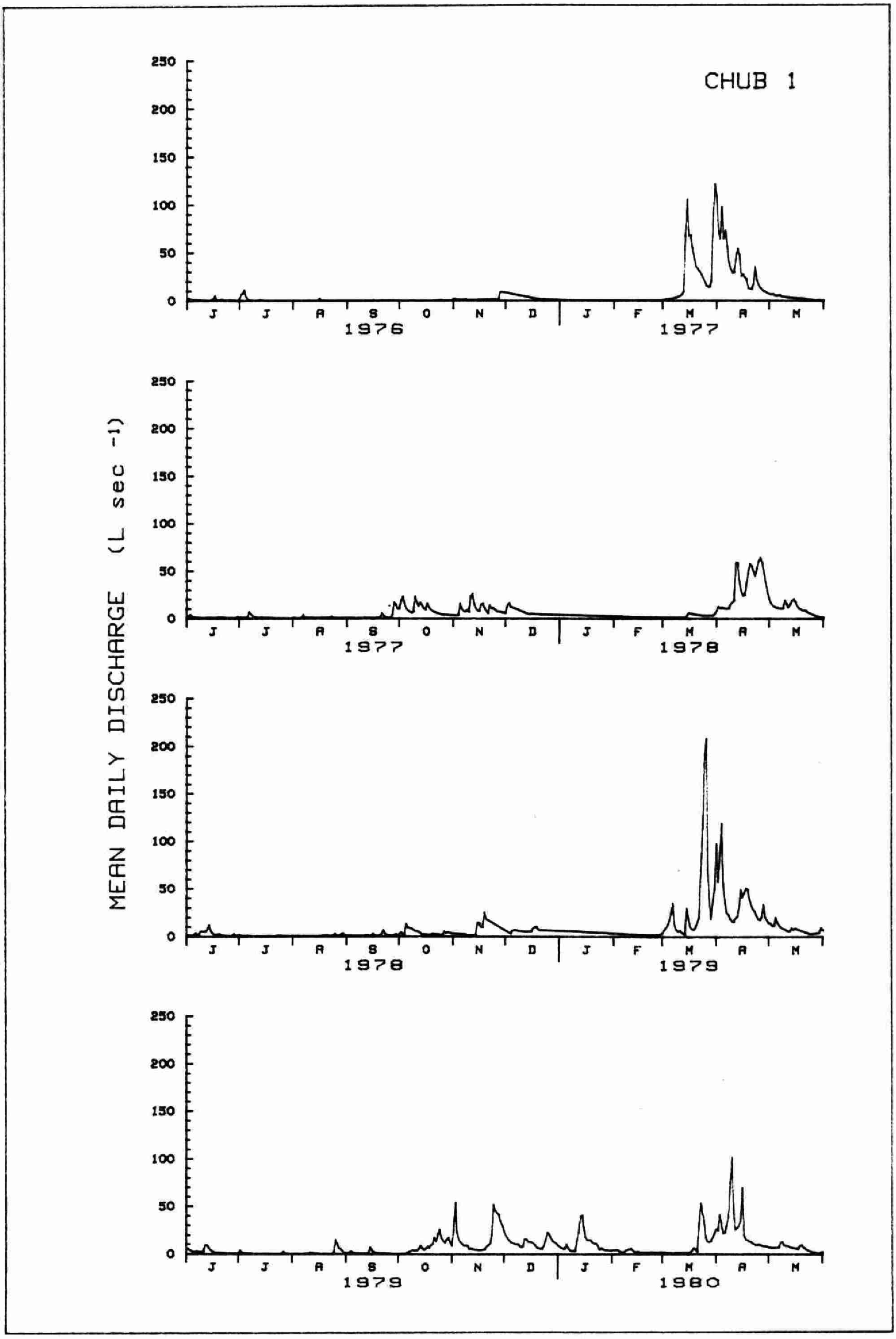

JERRY OUTLET
MEAN DAILY DISCHARGE (L sec -1)
2000
1500
1000
500
0
J
J
A
S
O
N
D
J
F
M
A
M
1976
1977
1977
1978
1978
1979
1979
1980

FIGURE 111



CHUB 1
MEAN DAILY DISCHARGE (L sec -1)
250
200
150
100
50
0
J J A S O N D J F M A M
1976 1977
1977 1978
1978 1979
1979 1980

FIGURE 112

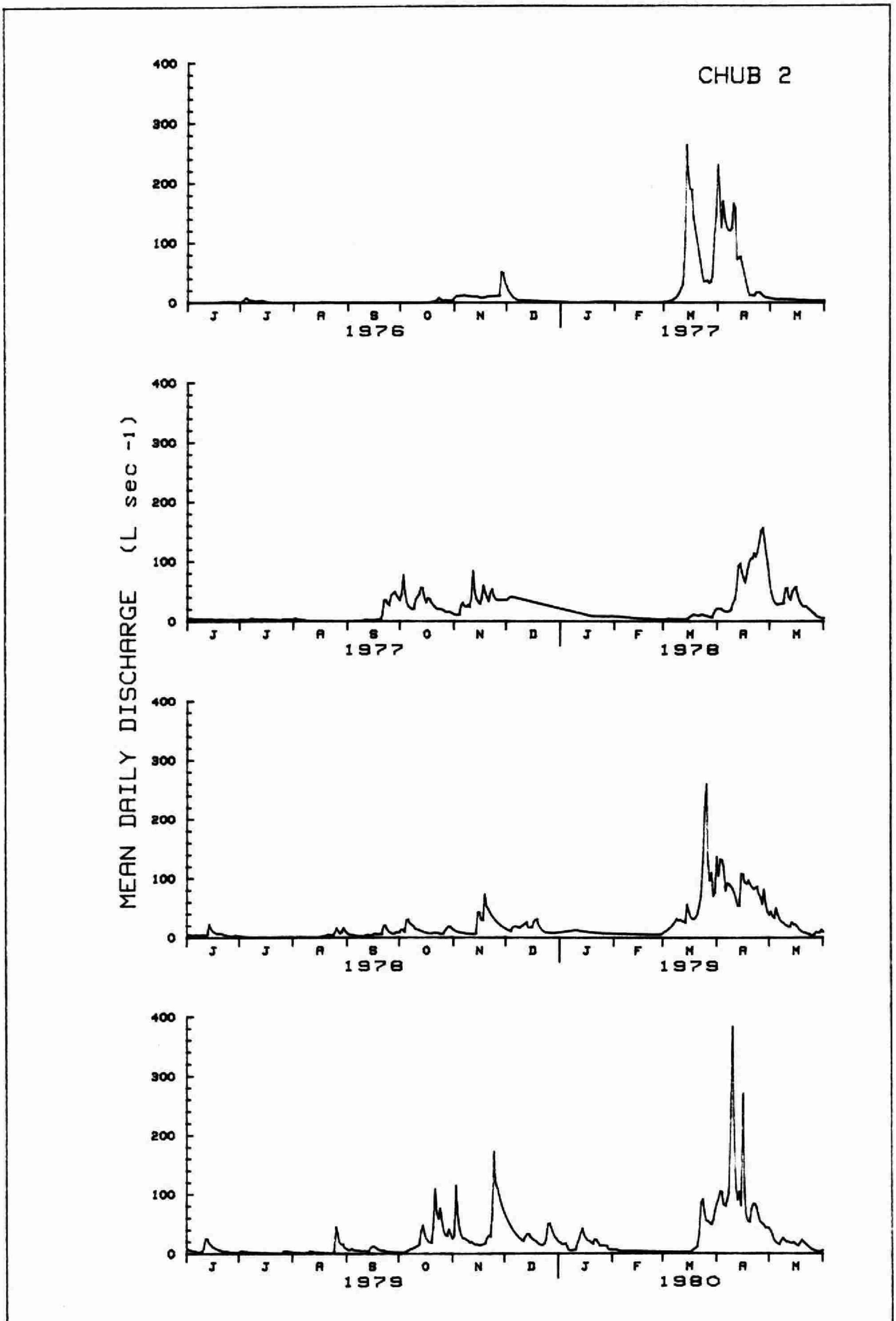
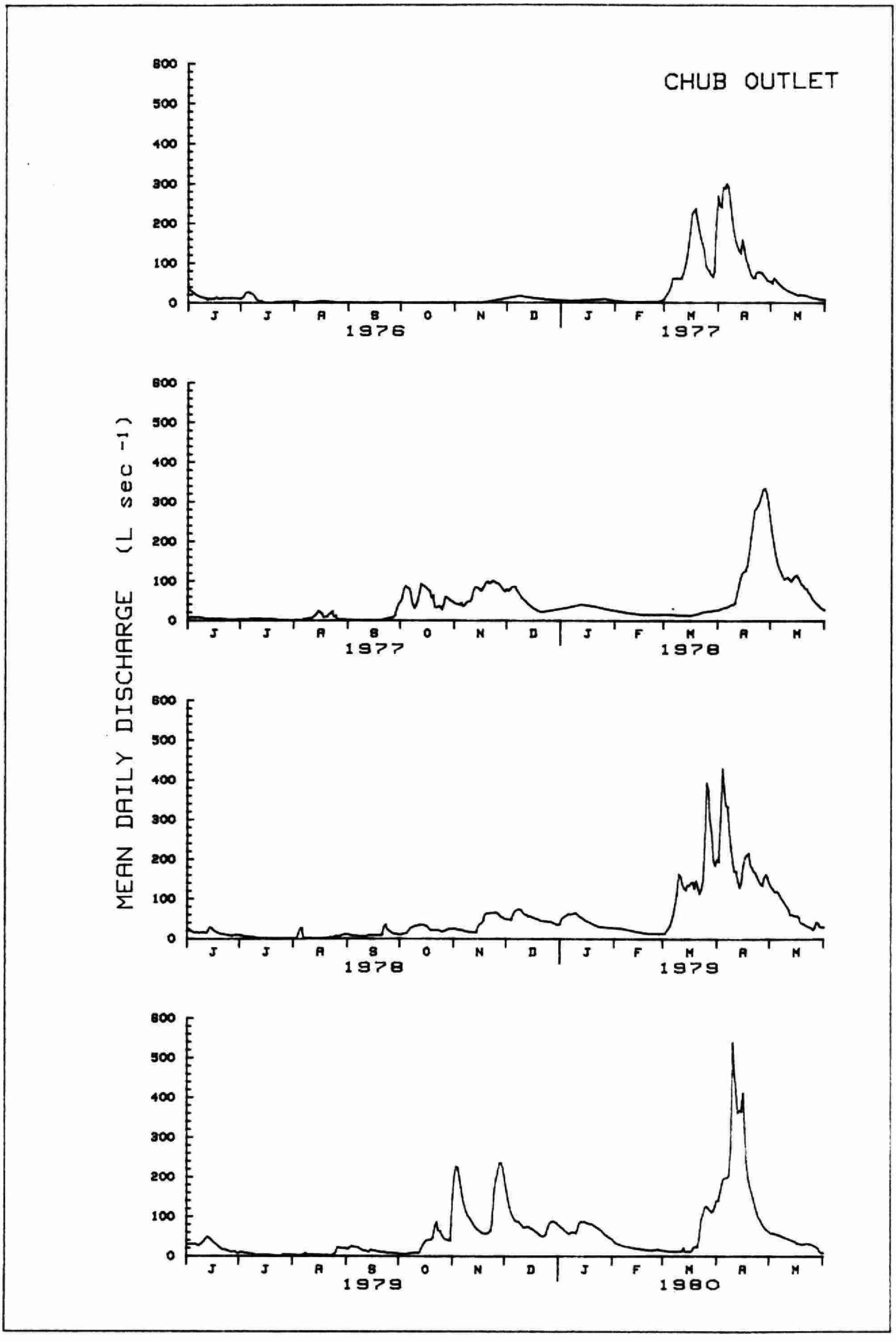

CHUB 2
MEAN DAILY DISCHARGE (L sec -1)
400
300
200
100
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 113



CHUB OUTLET
MEAN DAILY DISCHARGE (L sec -1)
600
500
400
300
200
100
0
J J A S O N D J F M A M
1976
1977
1977
1978
1978
1979
1979
1980

FIGURE 114

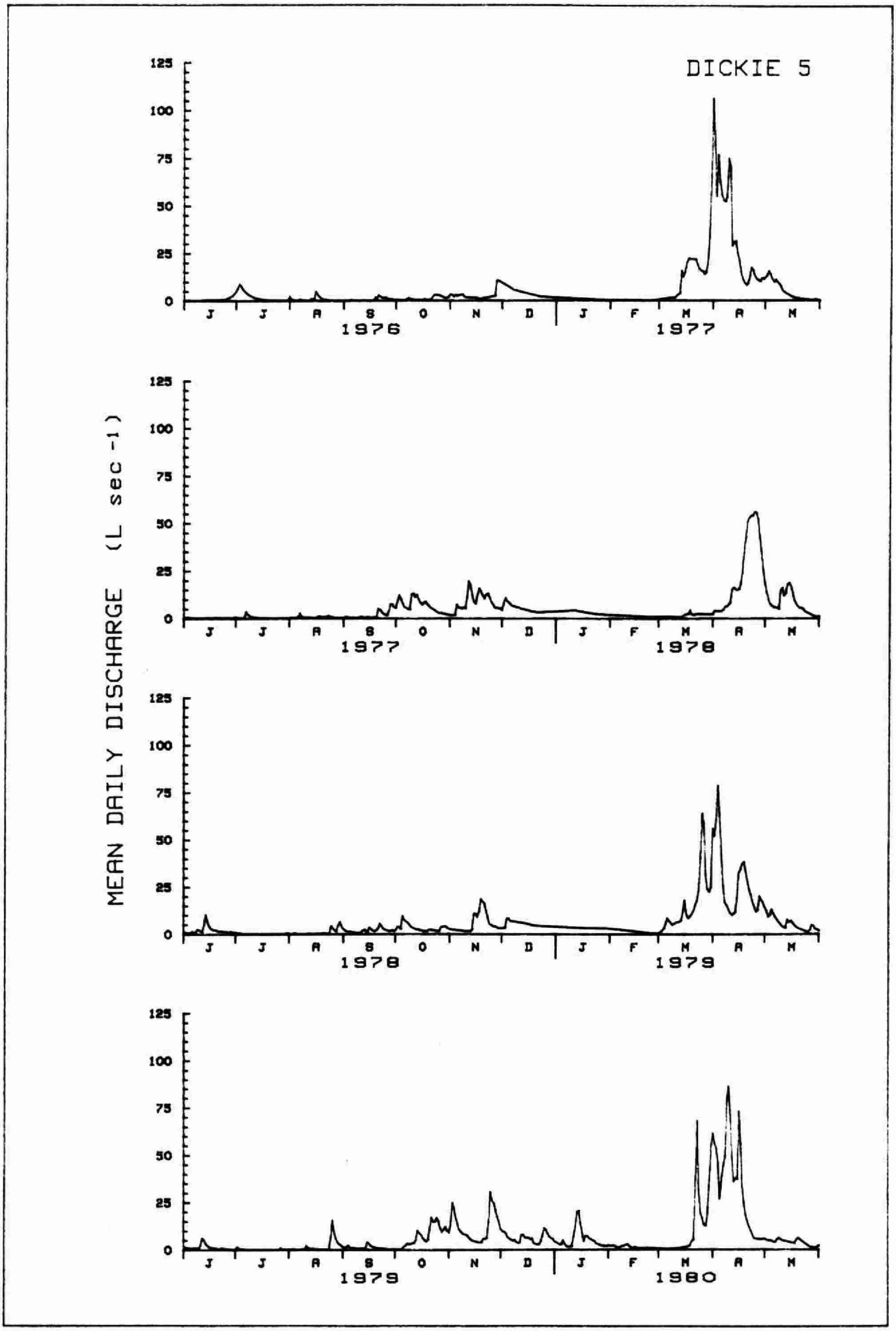

DICKIE 5
MEAN DAILY DISCHARGE (L sec -1)
125
100
75
50
25
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 115

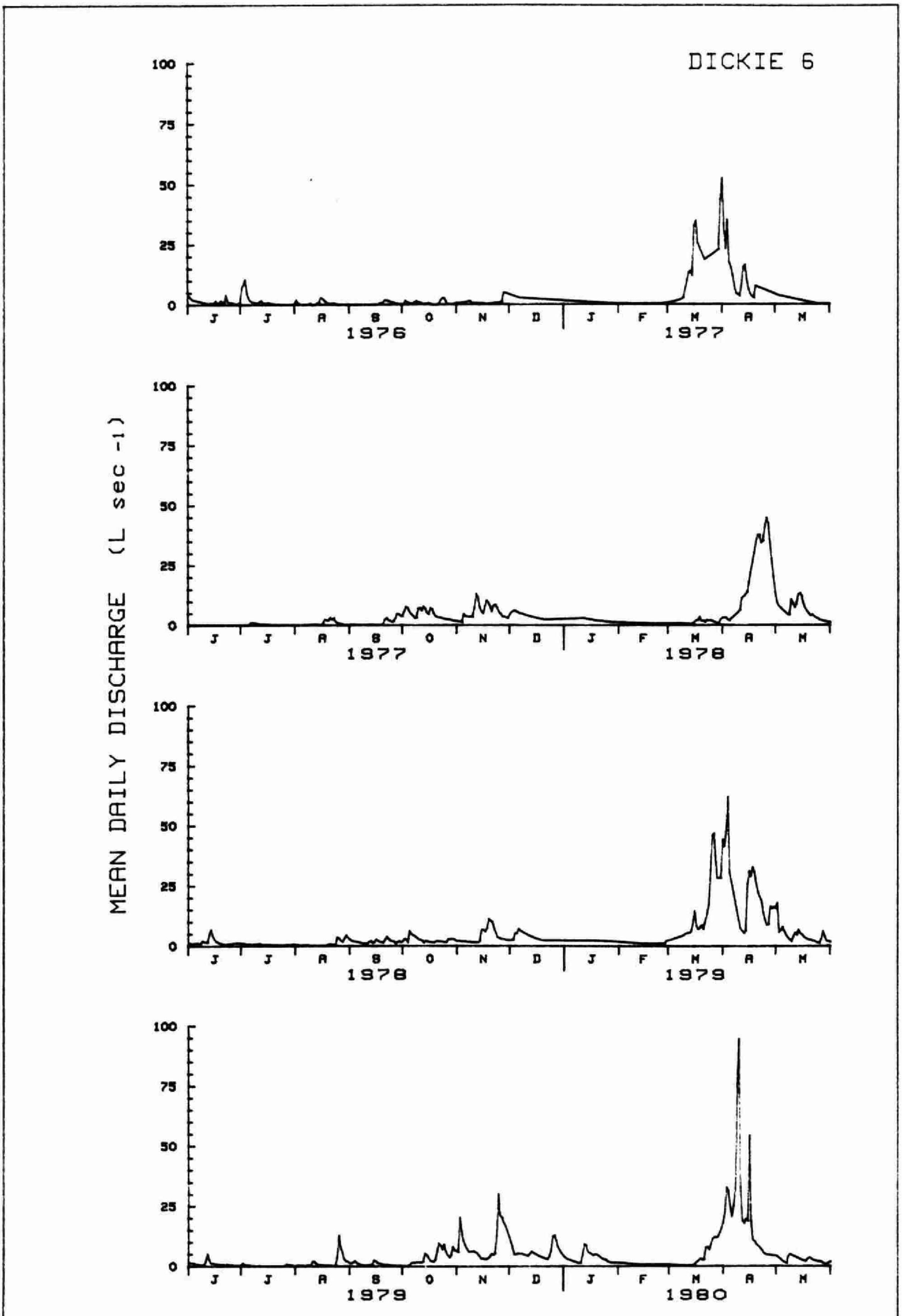
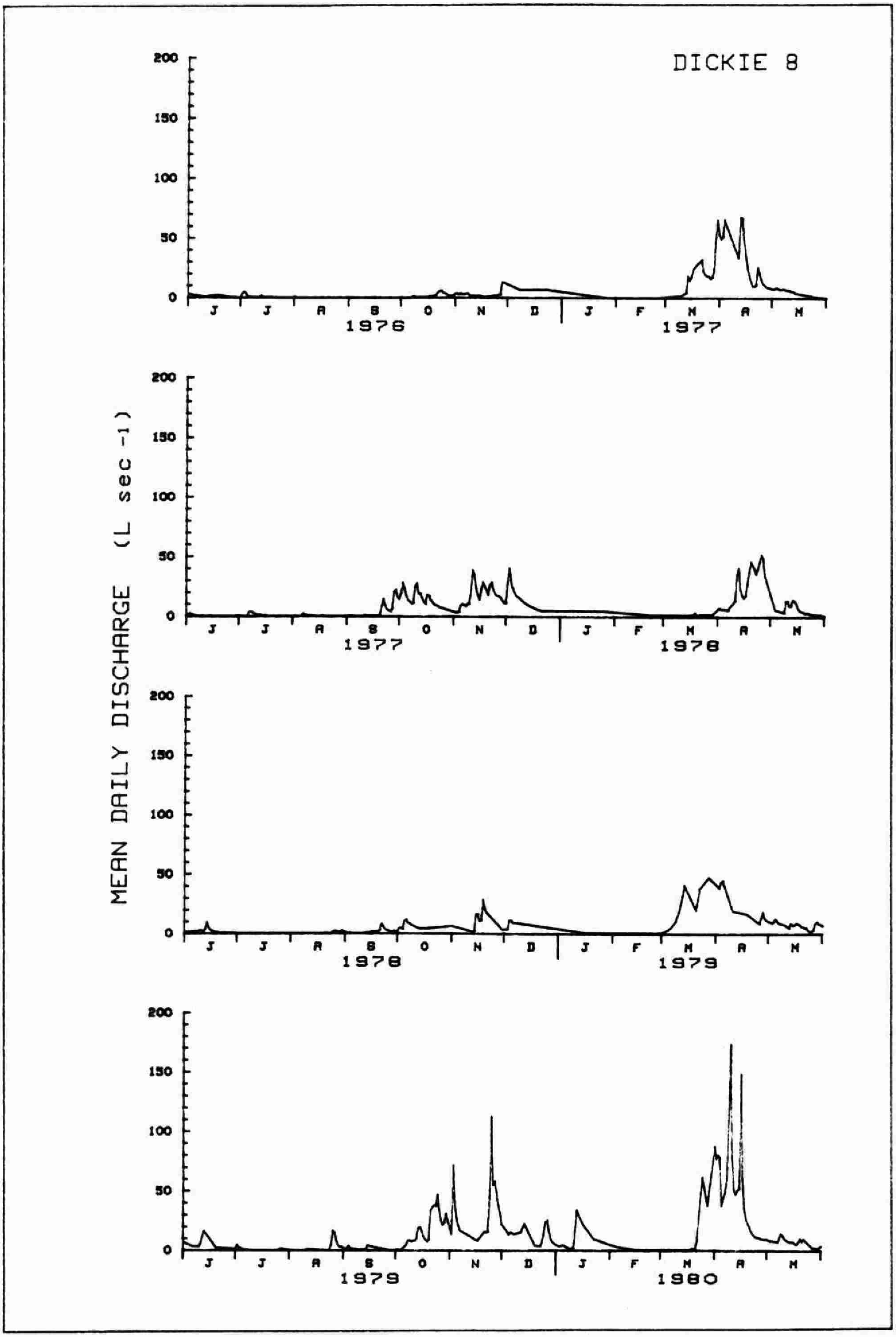

DICKIE 6
MEAN DAILY DISCHARGE (L sec -1)
100
75
50
25
0
J J A S O N D J F M A M
1976
1977
1977
1978
1978
1979
1979
1980

FIGURE 116



DICKIE 8
MEAN DAILY DISCHARGE (L sec -1)
200
150
100
50
0
J J A S O N D J F M A M
1976
1977
1977
1978
1978
1979
1979
1980

FIGURE 117

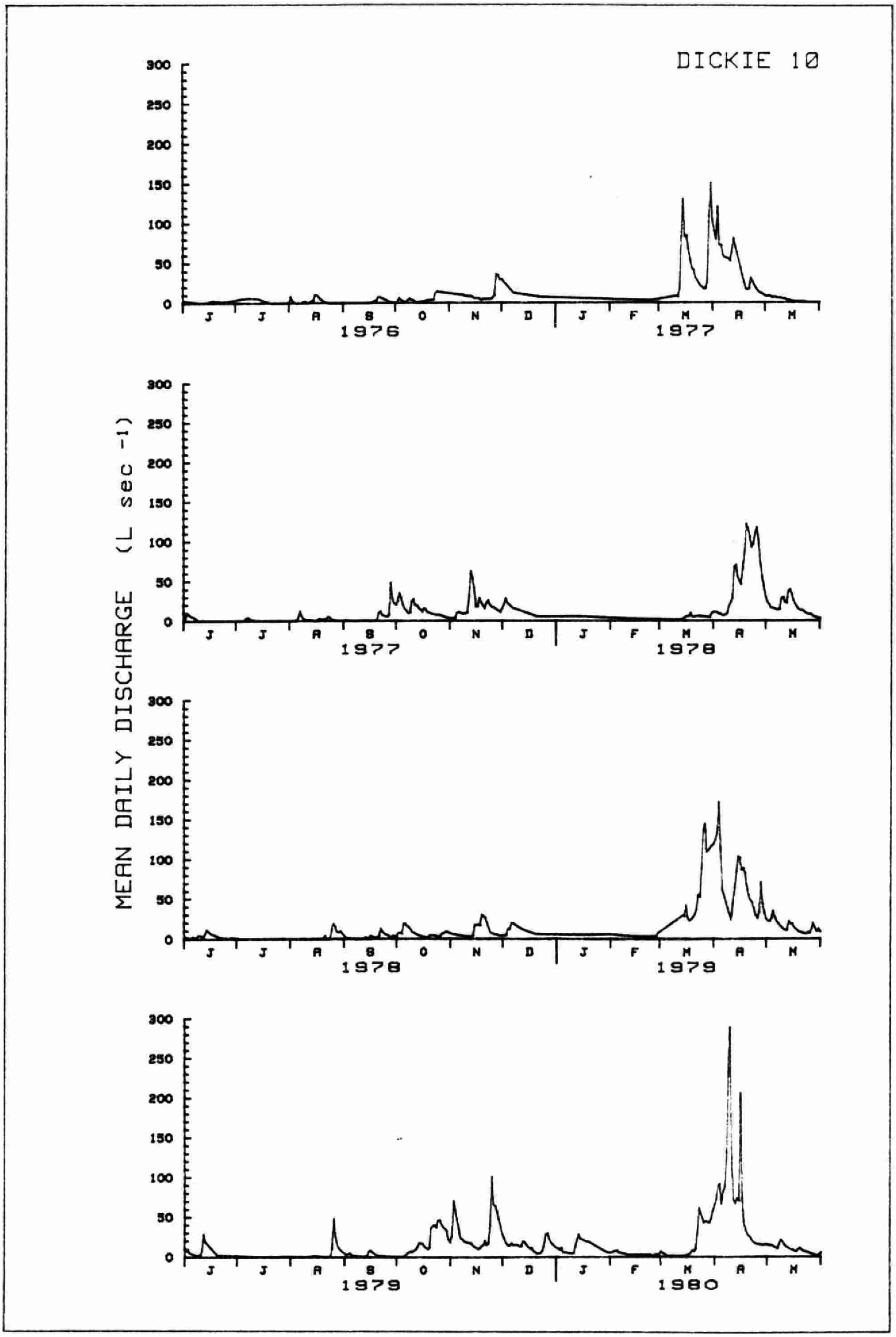
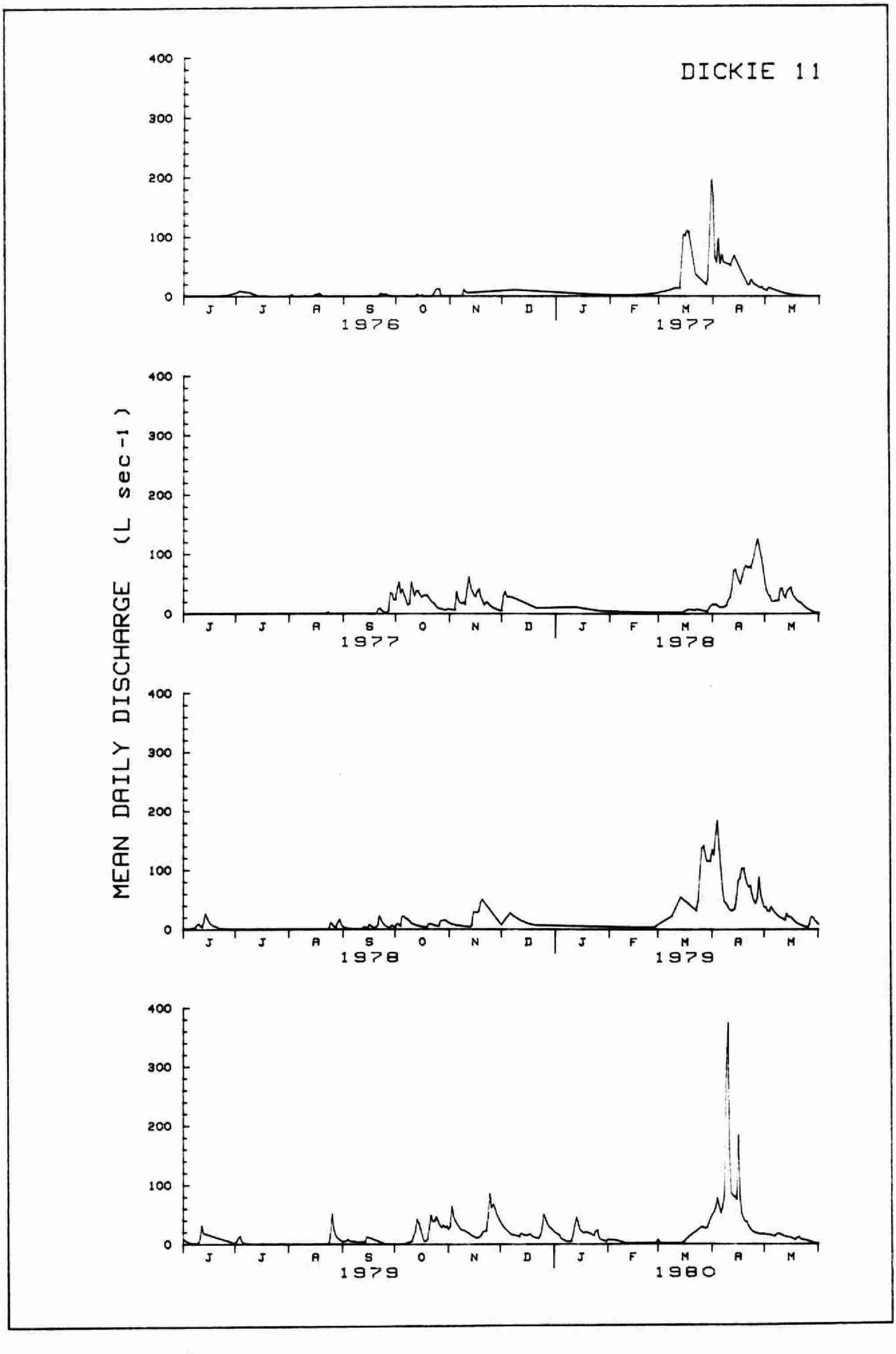

DICKIE 10
MEAN DAILY DISCHARGE (L sec -1)
300
250
200
150
100
50
0
J J A S O N D J F M A M
1976
1977
1977
1978
1978
1979
1979
1980

FIGURE 118



DICKIE 11
MEAN DAILY DISCHARGE (L sec-1)
400
300
200
100
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 119

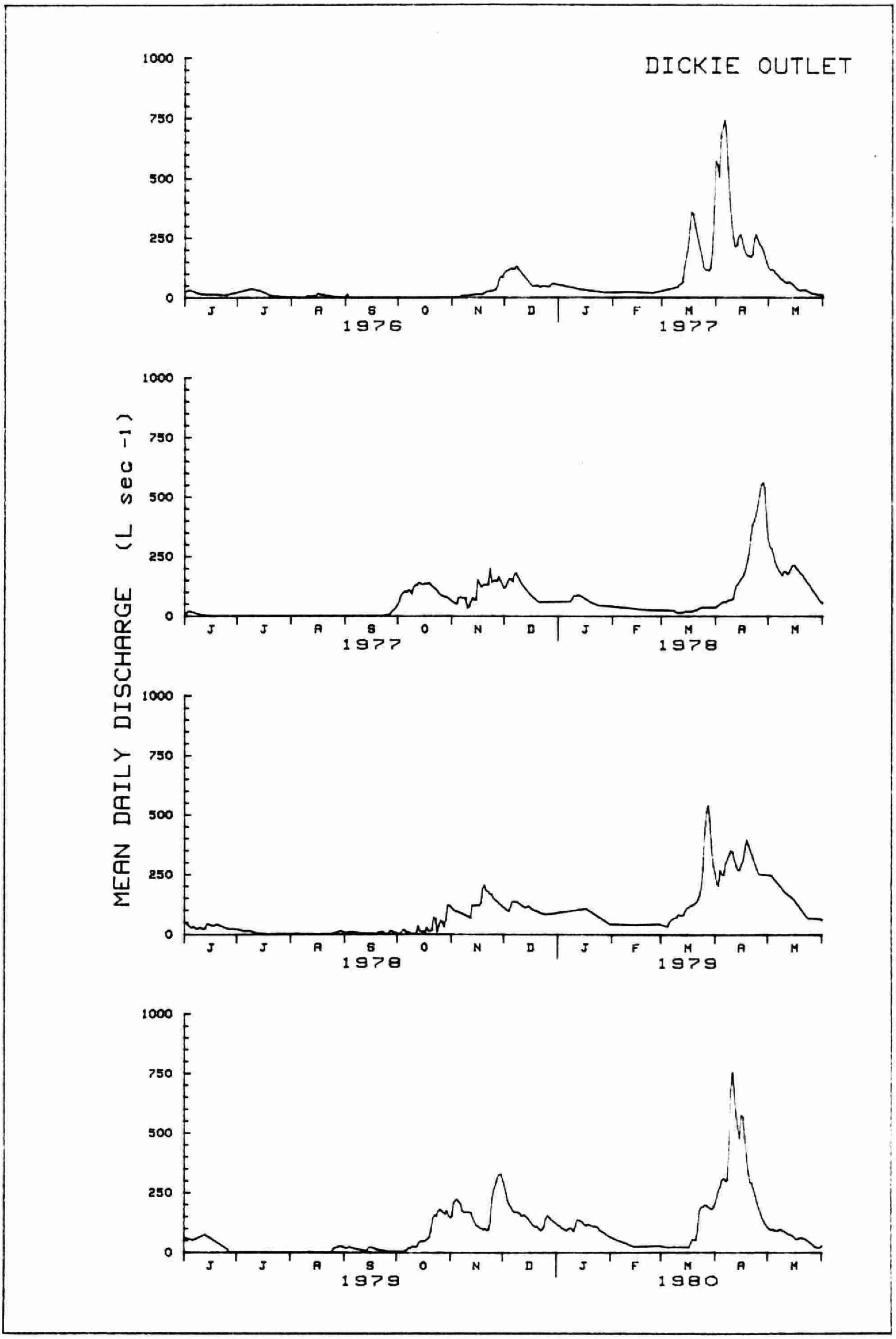

DICKIE OUTLET
MEAN DAILY DISCHARGE (L sec -1)
1000
750
500
250
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 120

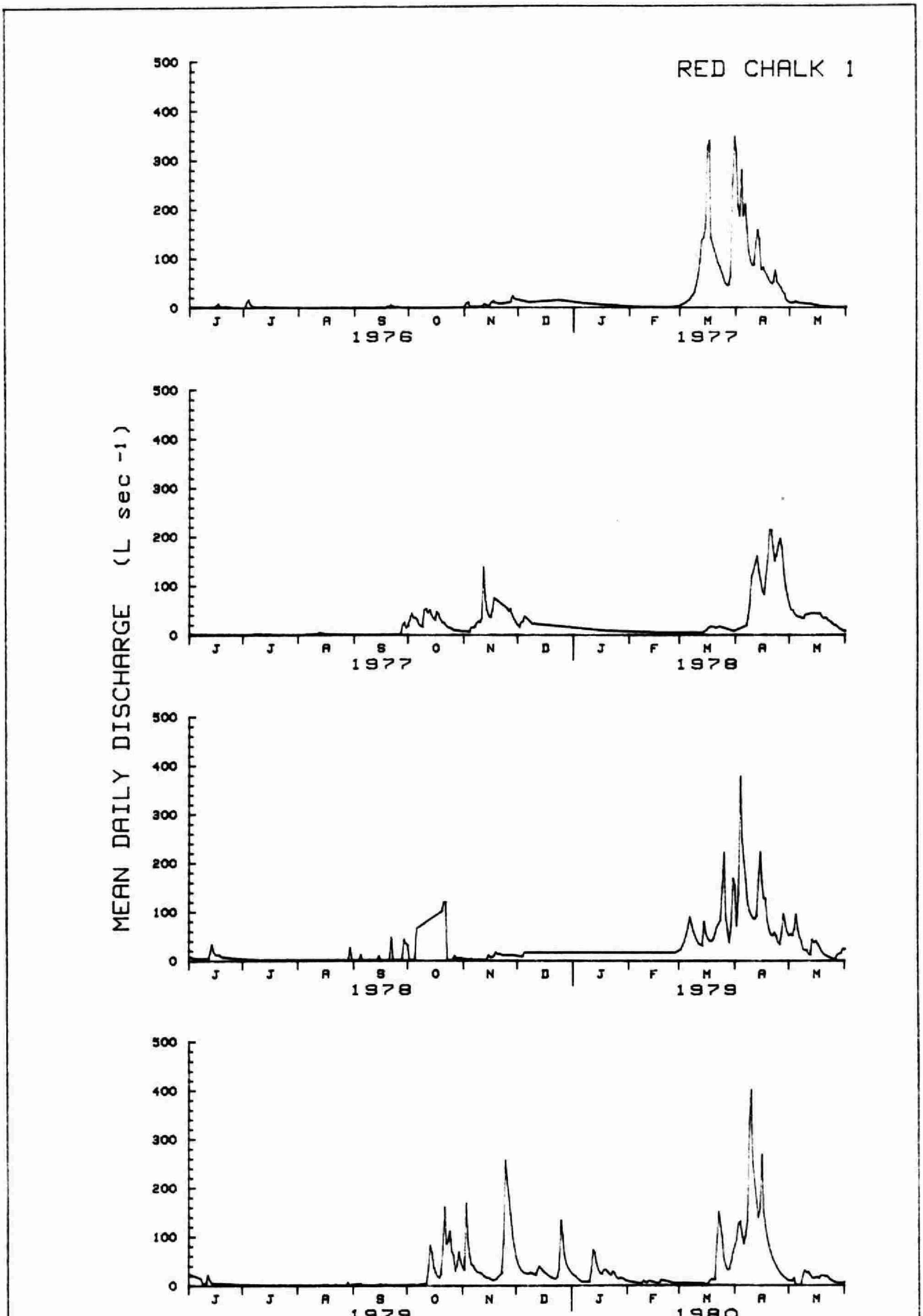

RED CHALK 1
MEAN DAILY DISCHARGE (L sec -1)
500
400
300
200
100
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 121

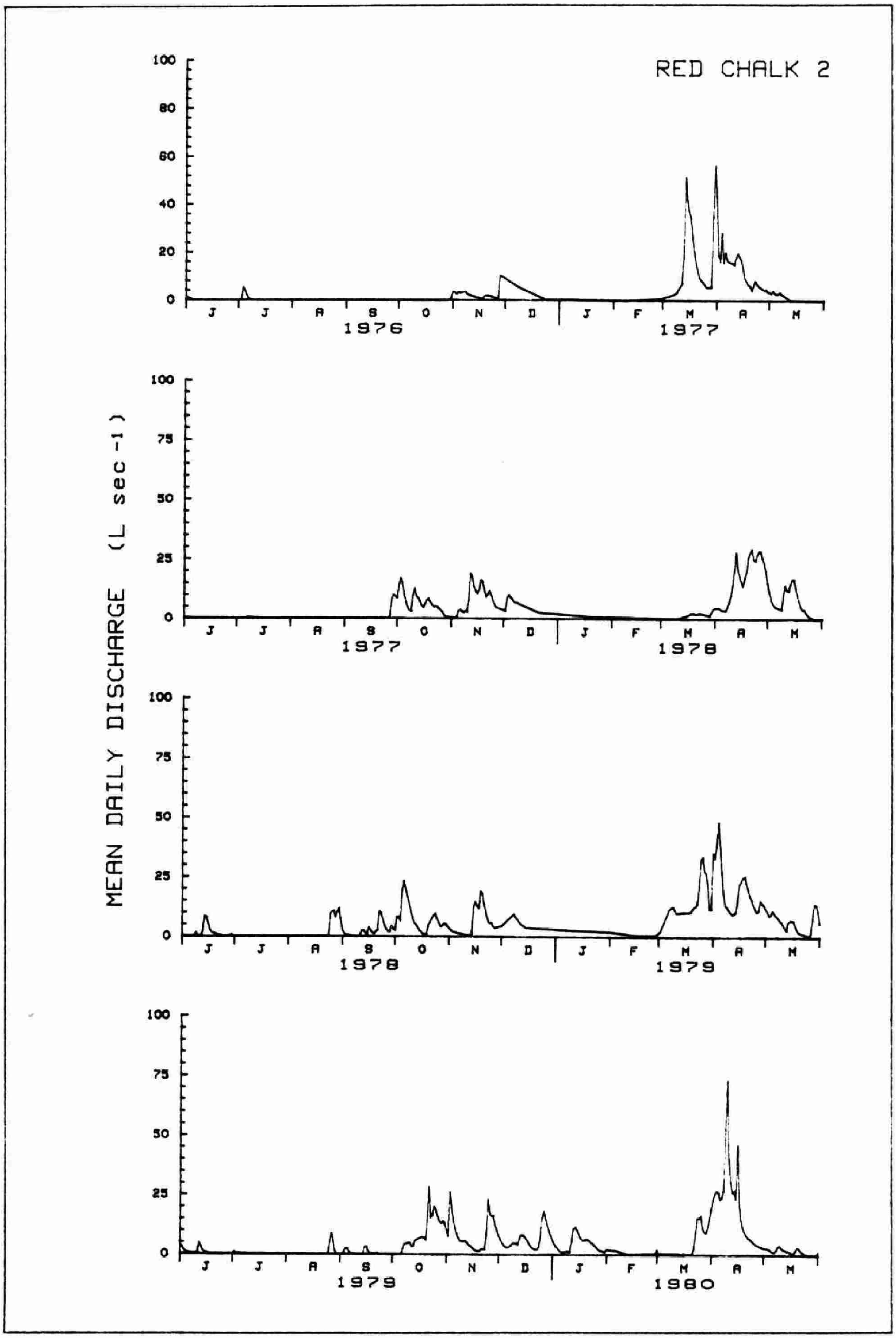

RED CHALK 2
MEAN DAILY DISCHARGE (L sec -1)
100
80
60
40
20
0
J J A S O N D J F M A M
1976
1977
100
75
50
25
0
J J A S O N D J F M A M
1977
1978
100
75
50
25
0
J J A S O N D J F M A M
1978
1979
100
75
50
25
0
J J A S O N D J F M A M
1979
1980

FIGURE 122

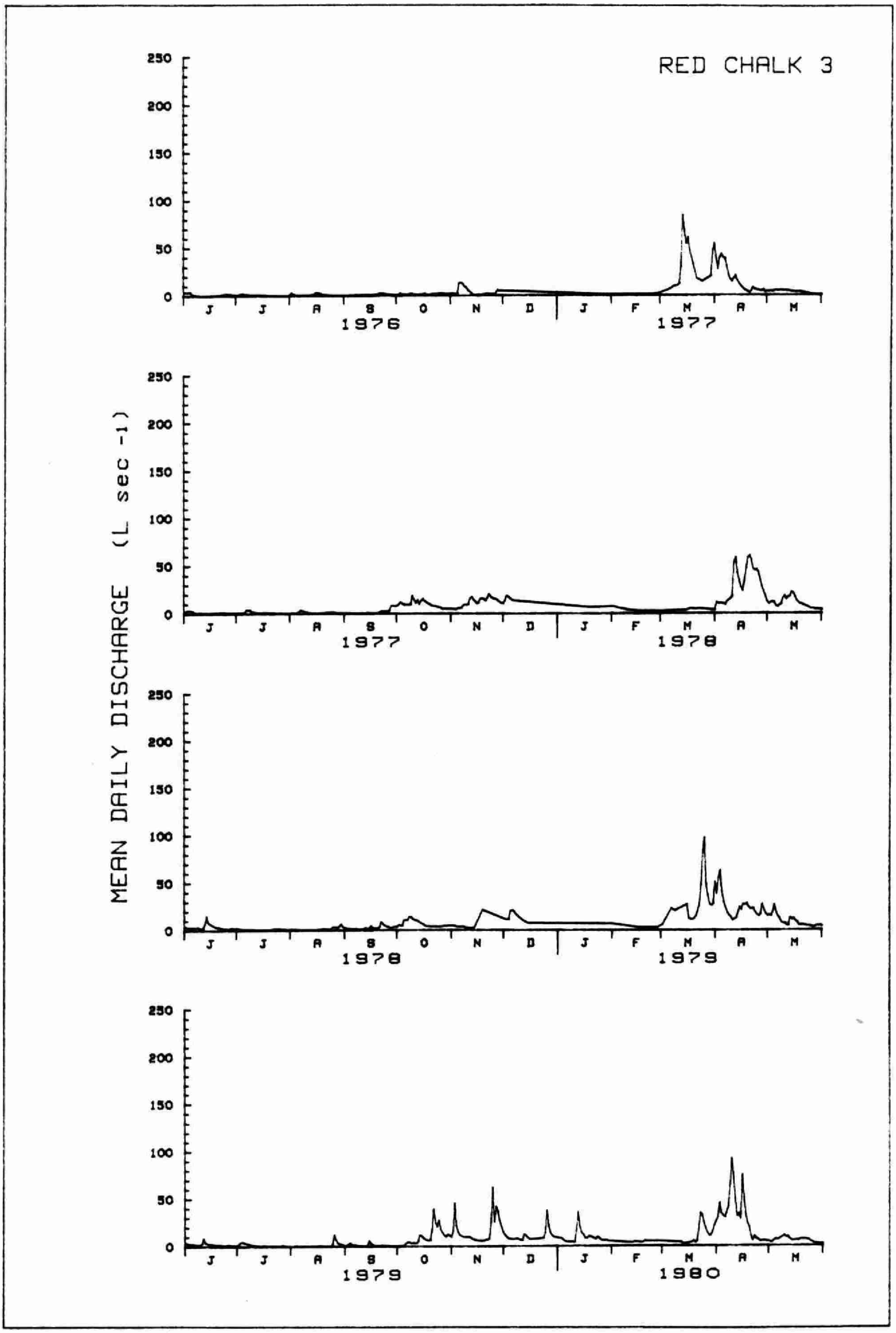

RED CHALK 3
MEAN DAILY DISCHARGE (L sec -1)
250
200
150
100
50
0
J J A S O N D J F M A M
1976
1977
1977
1978
1978
1979
1979
1980

FIGURE 123

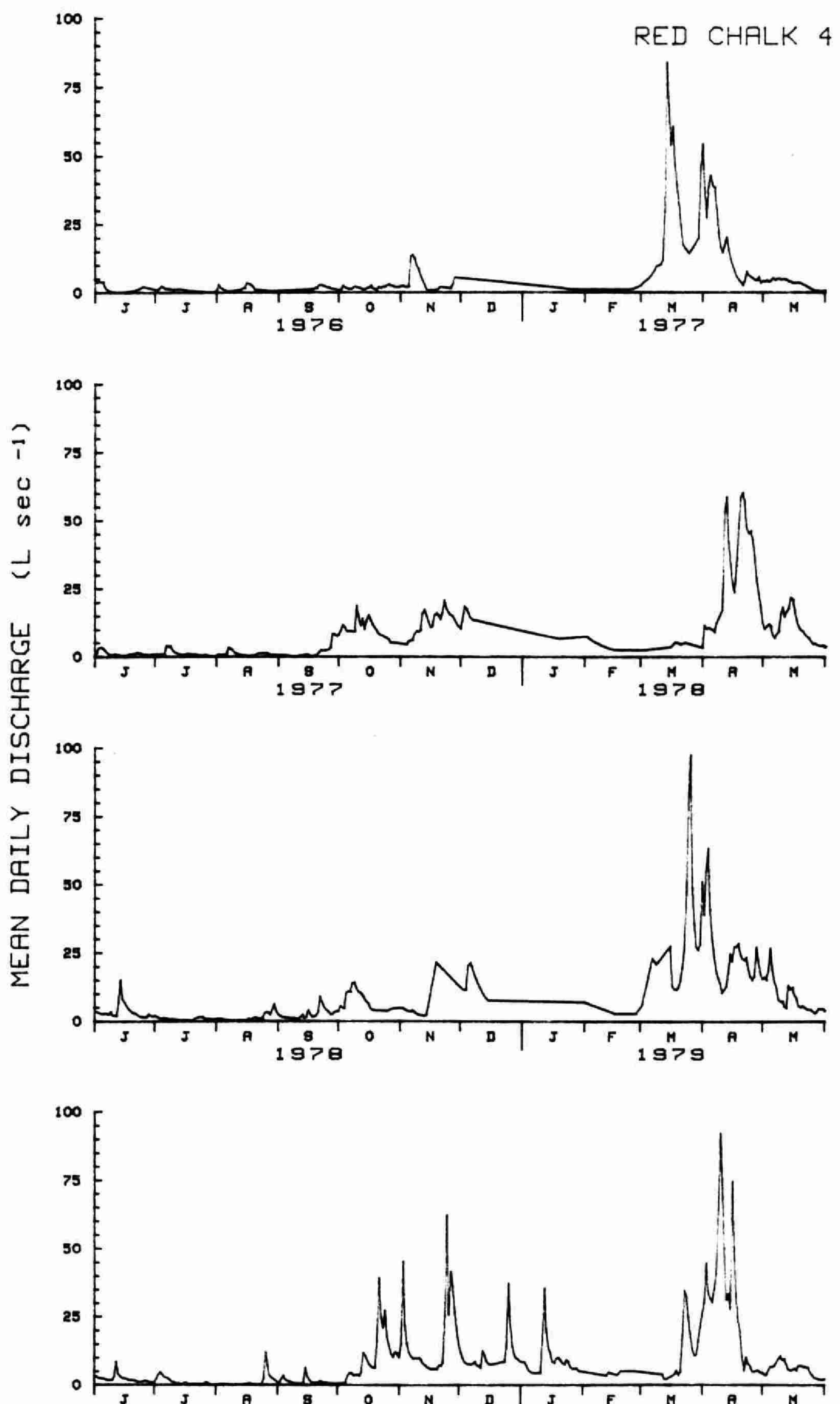

RED CHALK 4
MEAN DAILY DISCHARGE (L sec -1)
100
75
50
25
0
J
J
A
S
O
N
D
J
F
M
A
M
1976
1977
1978
1979
1980

FIGURE 124

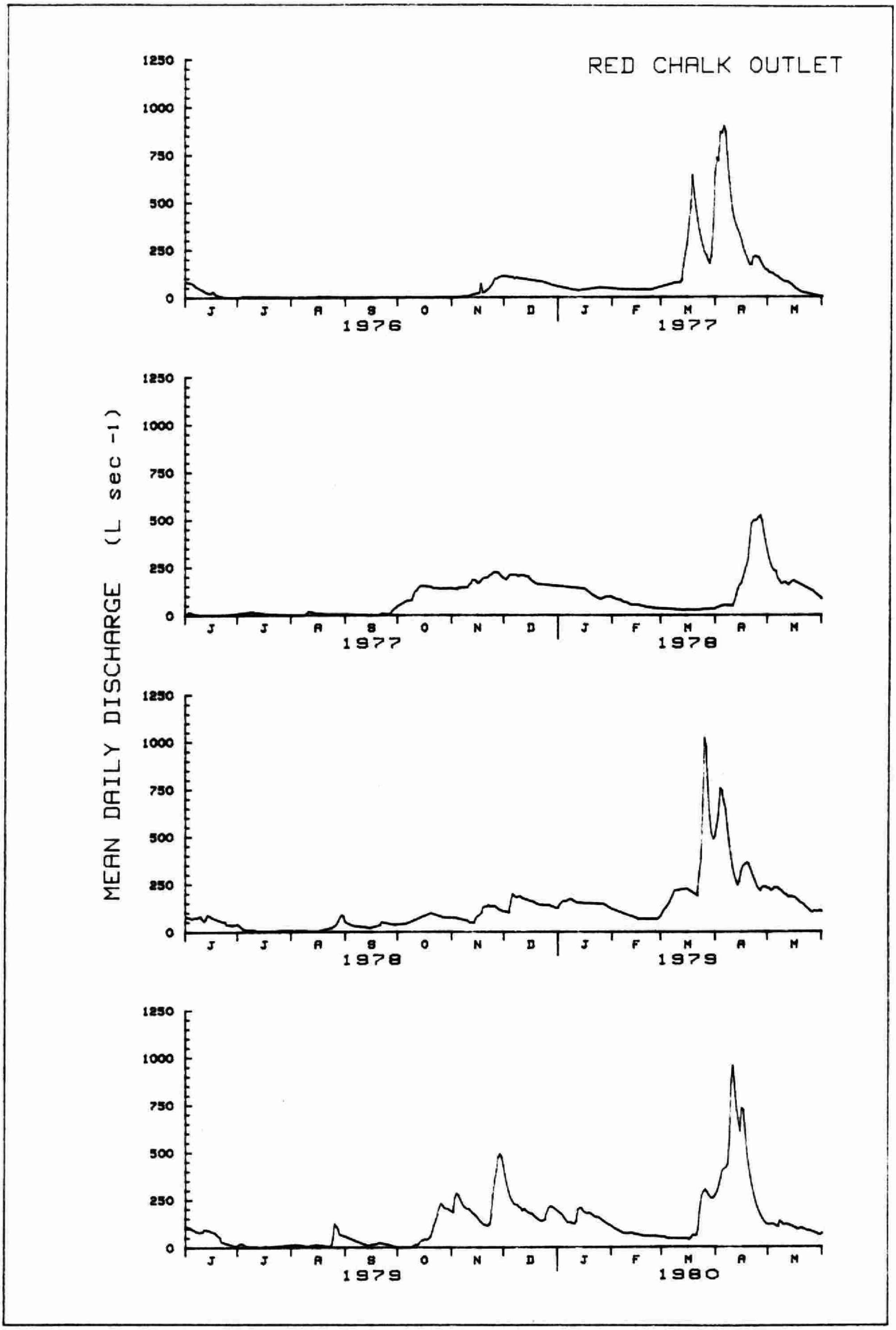

RED CHALK OUTLET
MEAN DAILY DISCHARGE (L sec -1)
1250
1000
750
500
250
0
J J A S O N D J F M A M
1976
1977
1977
1978
1978
1979
1979
1980

FIGURE 125

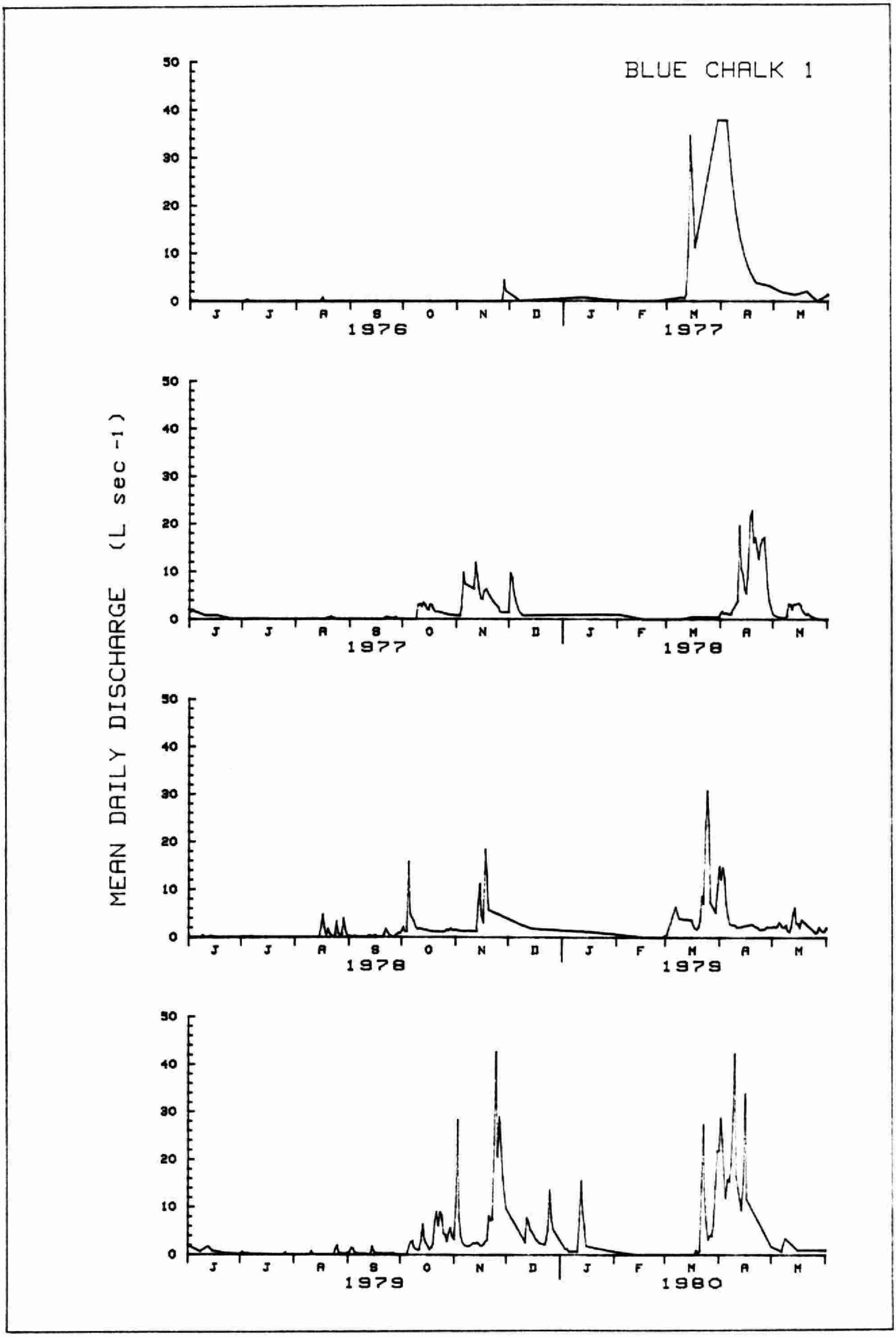

BLUE CHALK 1
MEAN DAILY DISCHARGE (L sec -1)
50
40
30
20
10
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 126

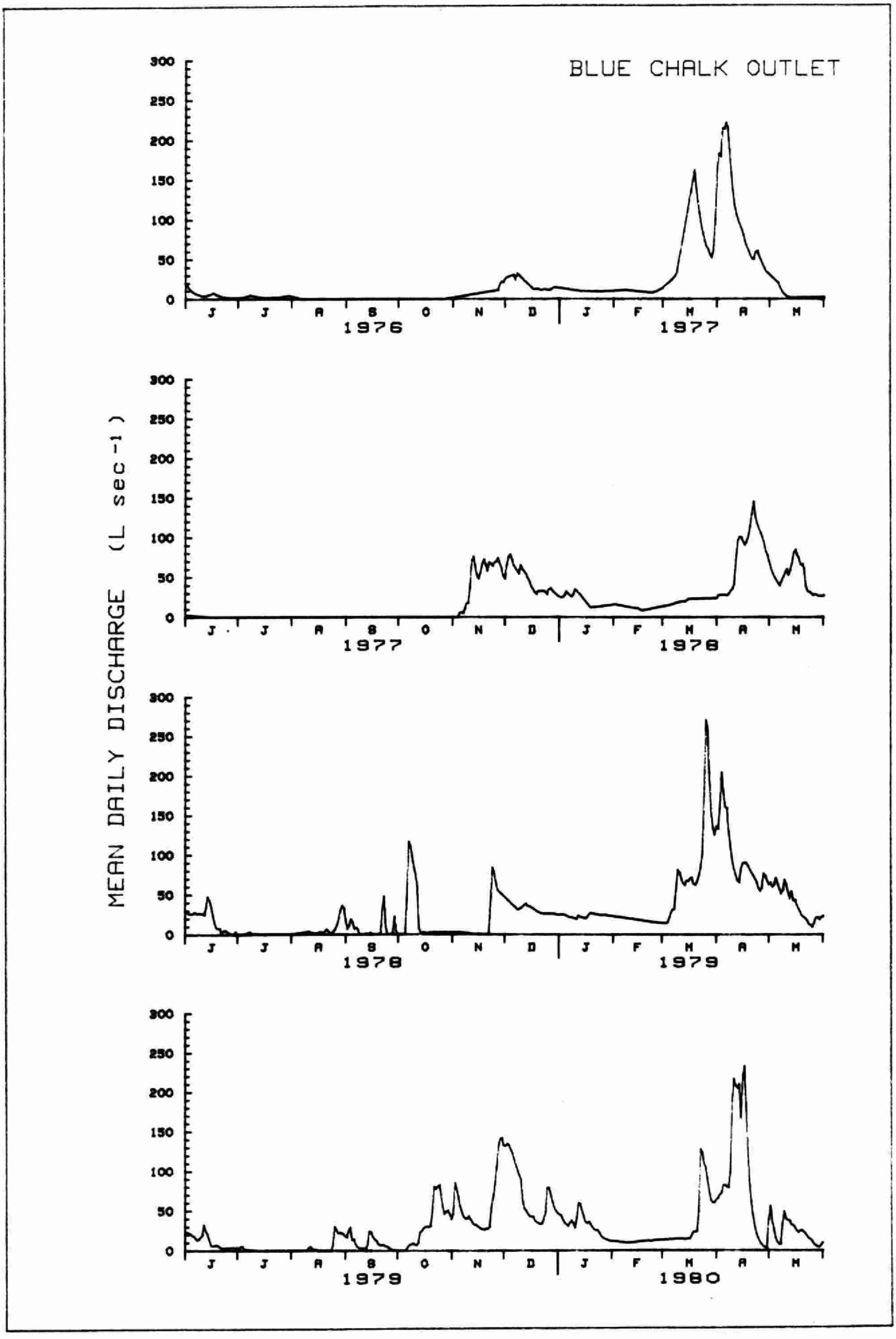

BLUE CHALK OUTLET
MEAN DAILY DISCHARGE (L sec-1)
300
250
200
150
100
50
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 127

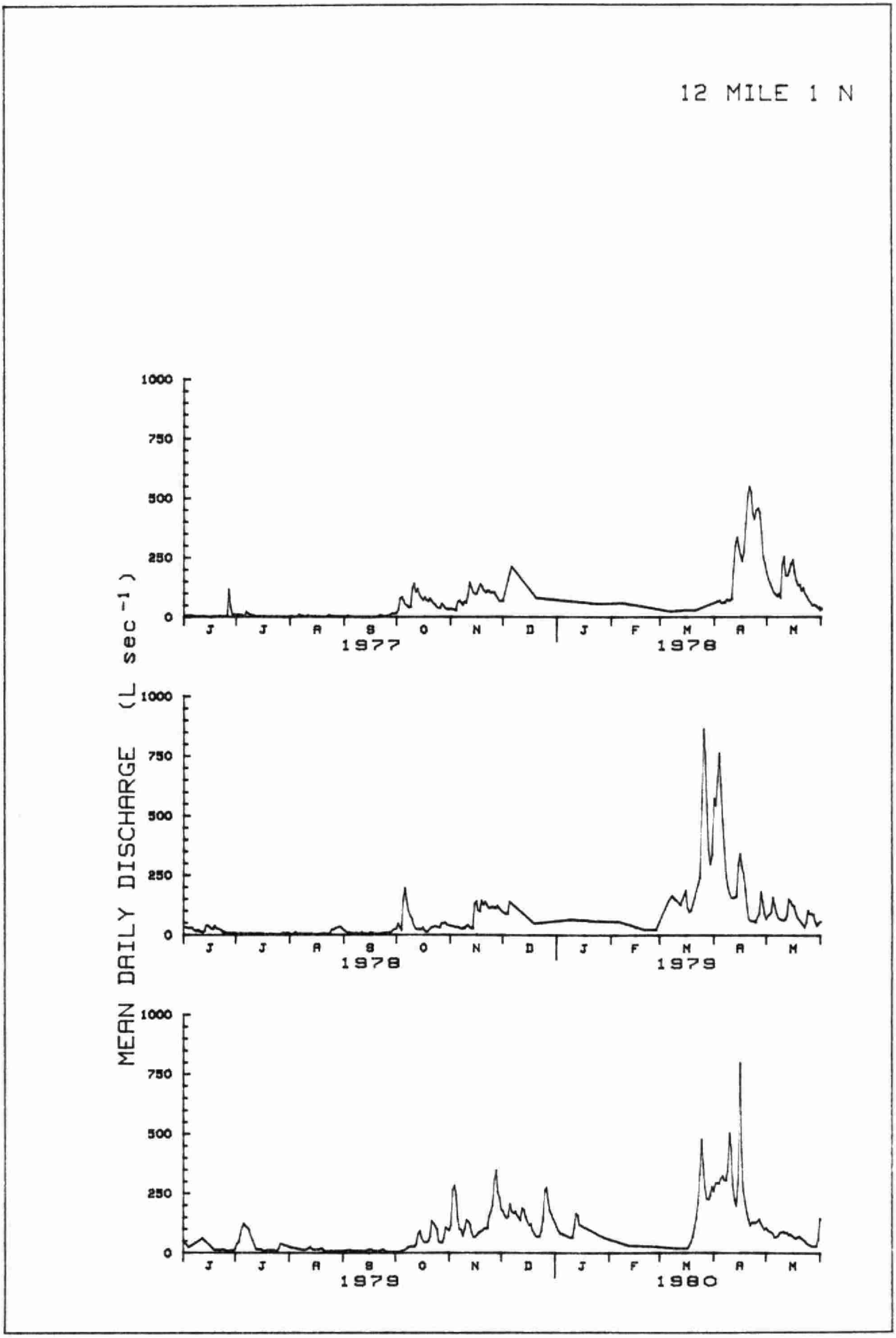

12 MILE 1 N
MEAN DAILY DISCHARGE (L sec⁻¹)
1000
750
500
250
0
J J A S O N D J F M A M
1977
1978
1978
1979
1979
1980

FIGURE 128

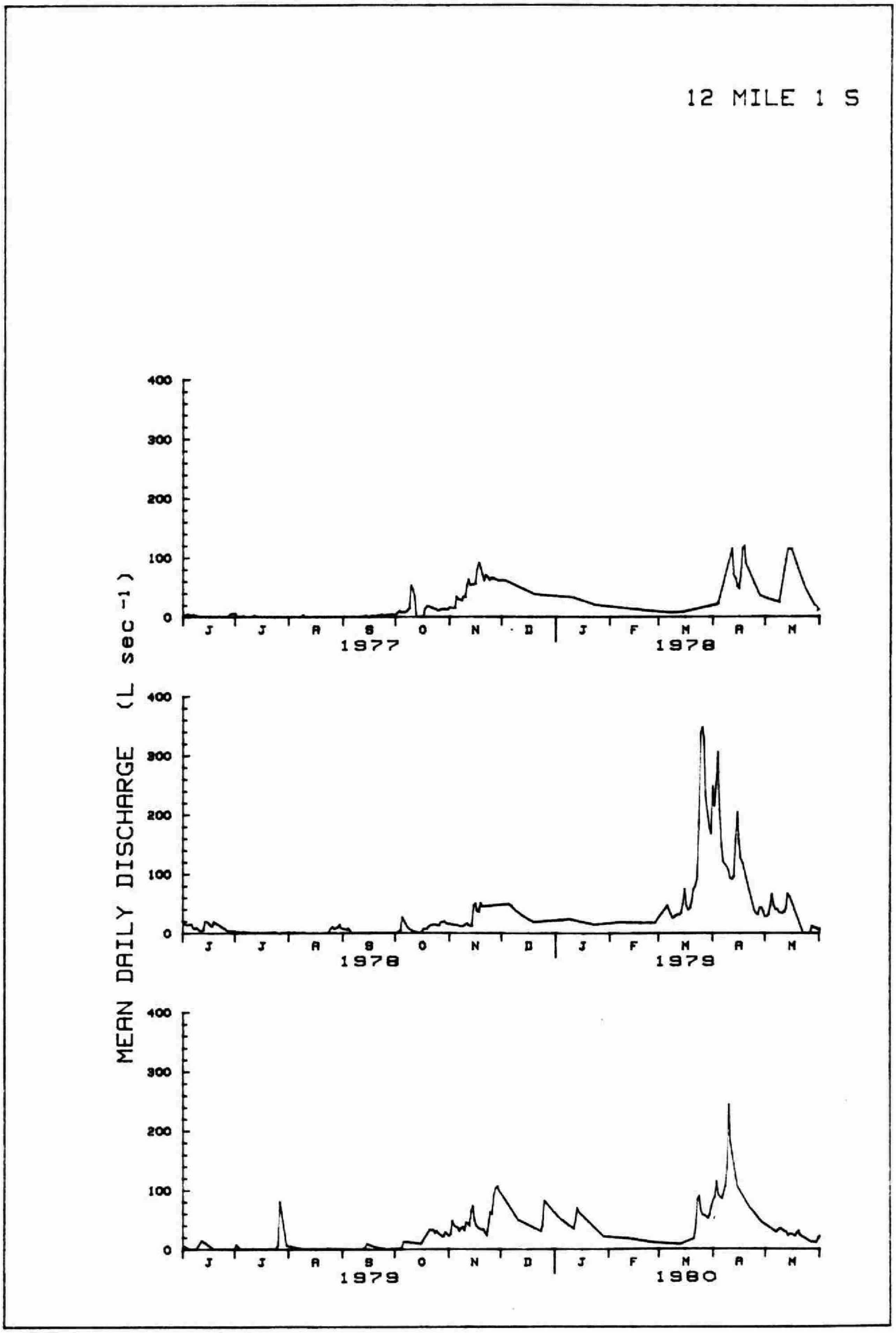

12 MILE 1 S
MEAN DAILY DISCHARGE (L sec -1)
400
300
200
100
0
J J A S O N D J F M A M
1977
1978
1979
1980

FIGURE 129

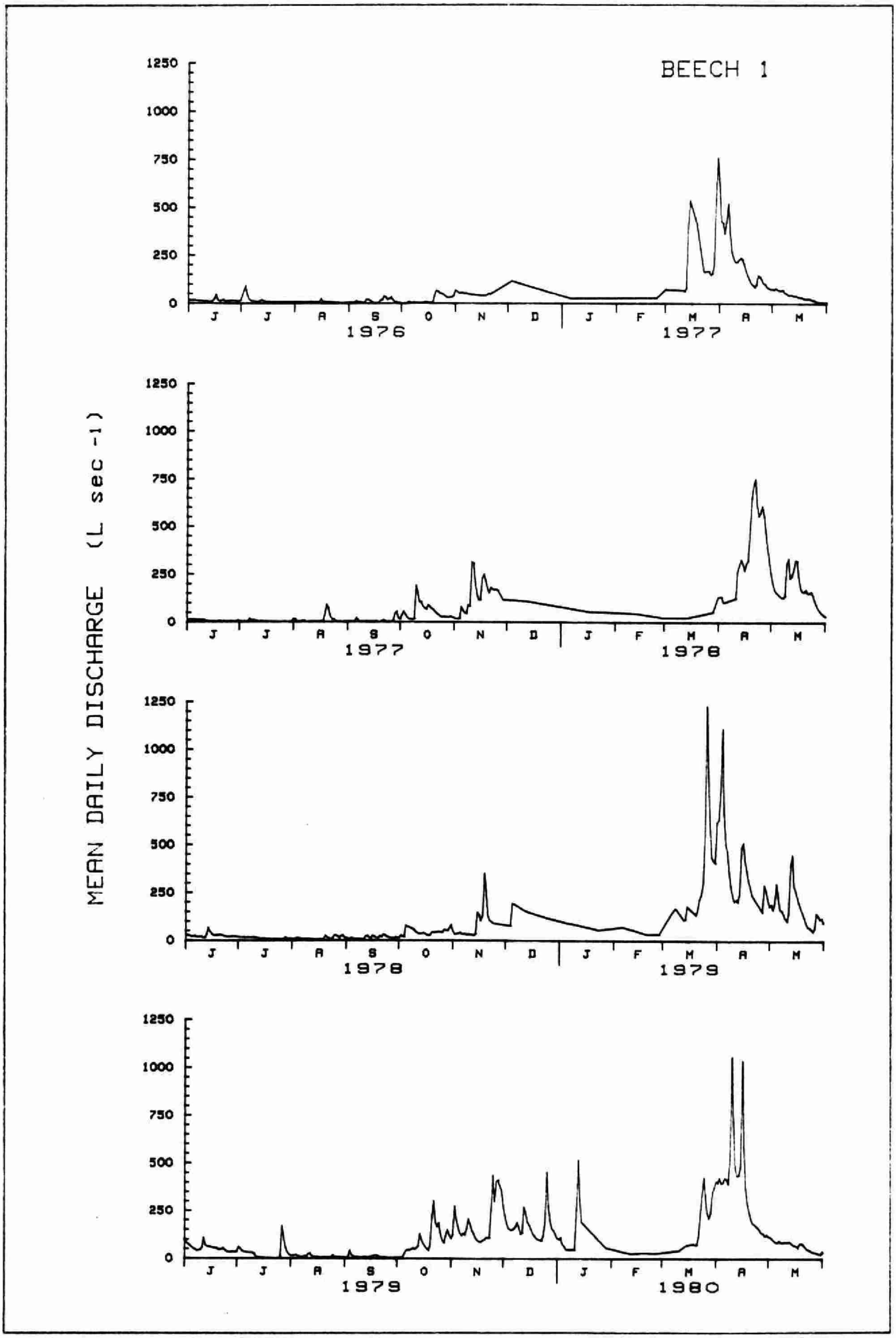

BEECH 1
MEAN DAILY DISCHARGE (L sec -1)
1250
1000
750
500
250
0
J J A S O N D J F M A M
1976
1977
1977
1978
1978
1979
1979
1980

FIGURE 130

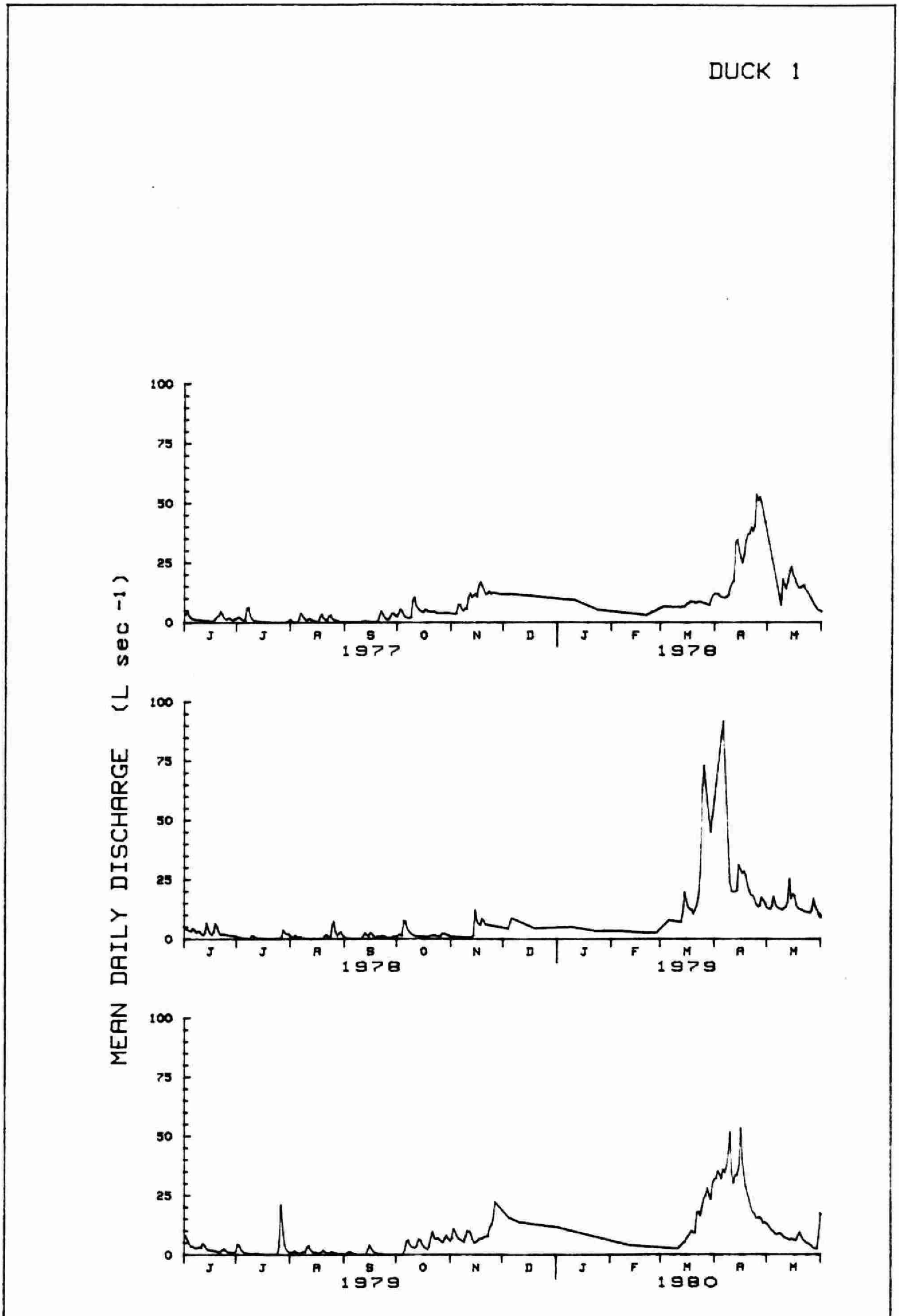

DUCK 1
MEAN DAILY DISCHARGE (L sec -1)
100
75
50
25
0
J J A S O N D J F M A M
1977
1978
1979
1980

FIGURE 131

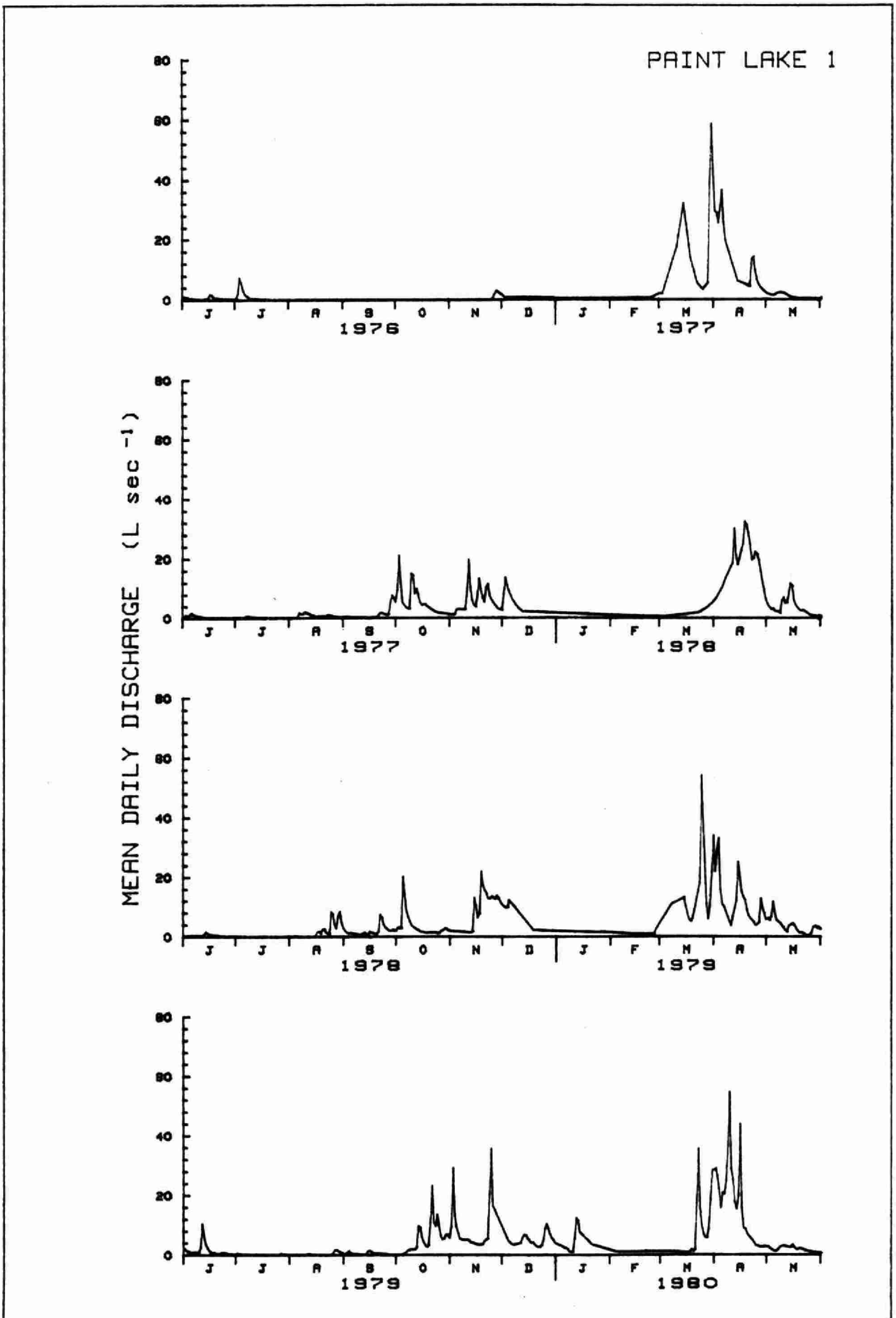

PAINT LAKE 1
MEAN DAILY DISCHARGE (L sec -1)
0
20
40
60
80
J
J
A
S
O
N
D
J
F
M
A
M
1976
1977
1978
1979
1980

FIGURE 132

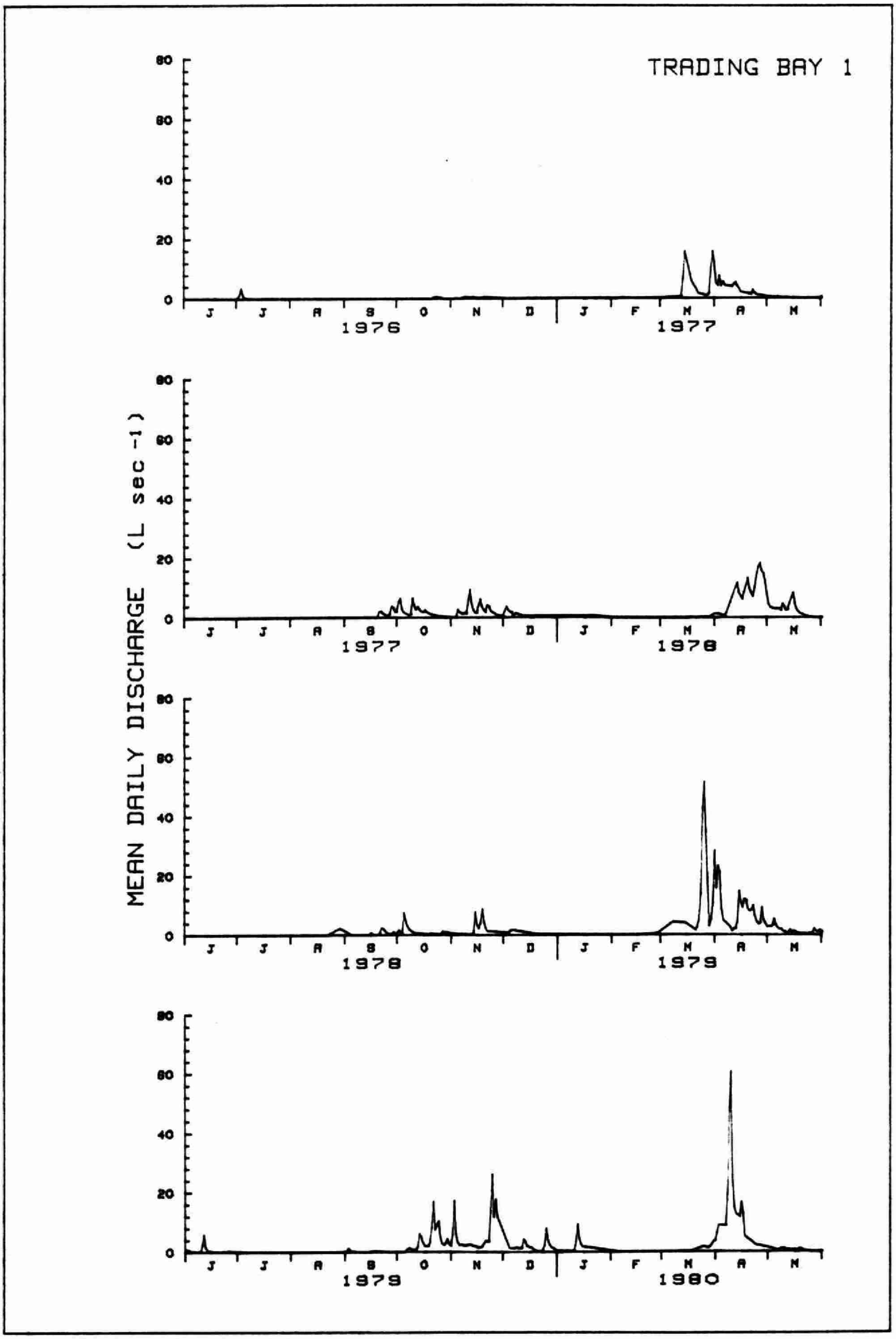

TRADING BAY 1
MEAN DAILY DISCHARGE (L sec -1)
0
20
40
60
80
J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 133

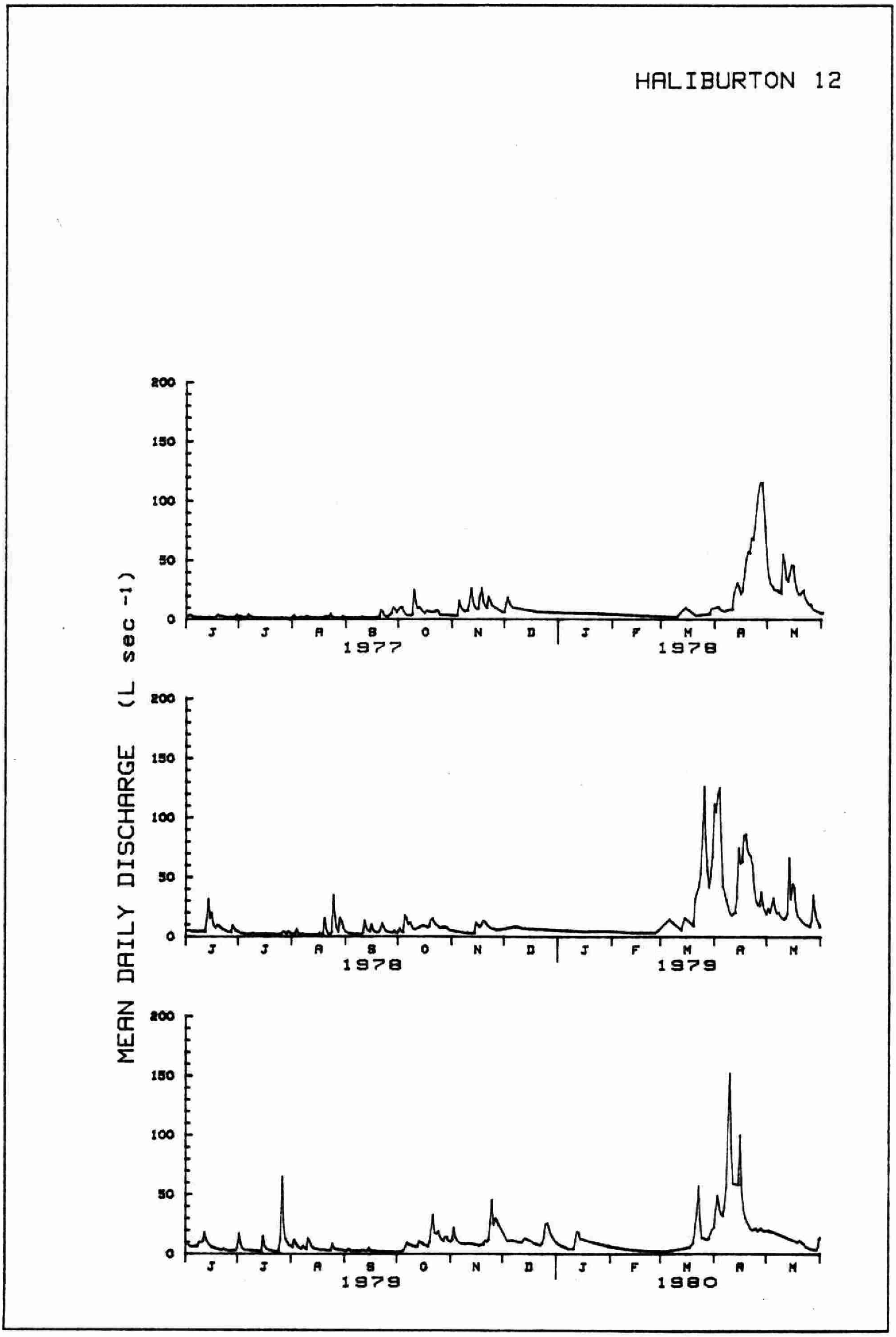
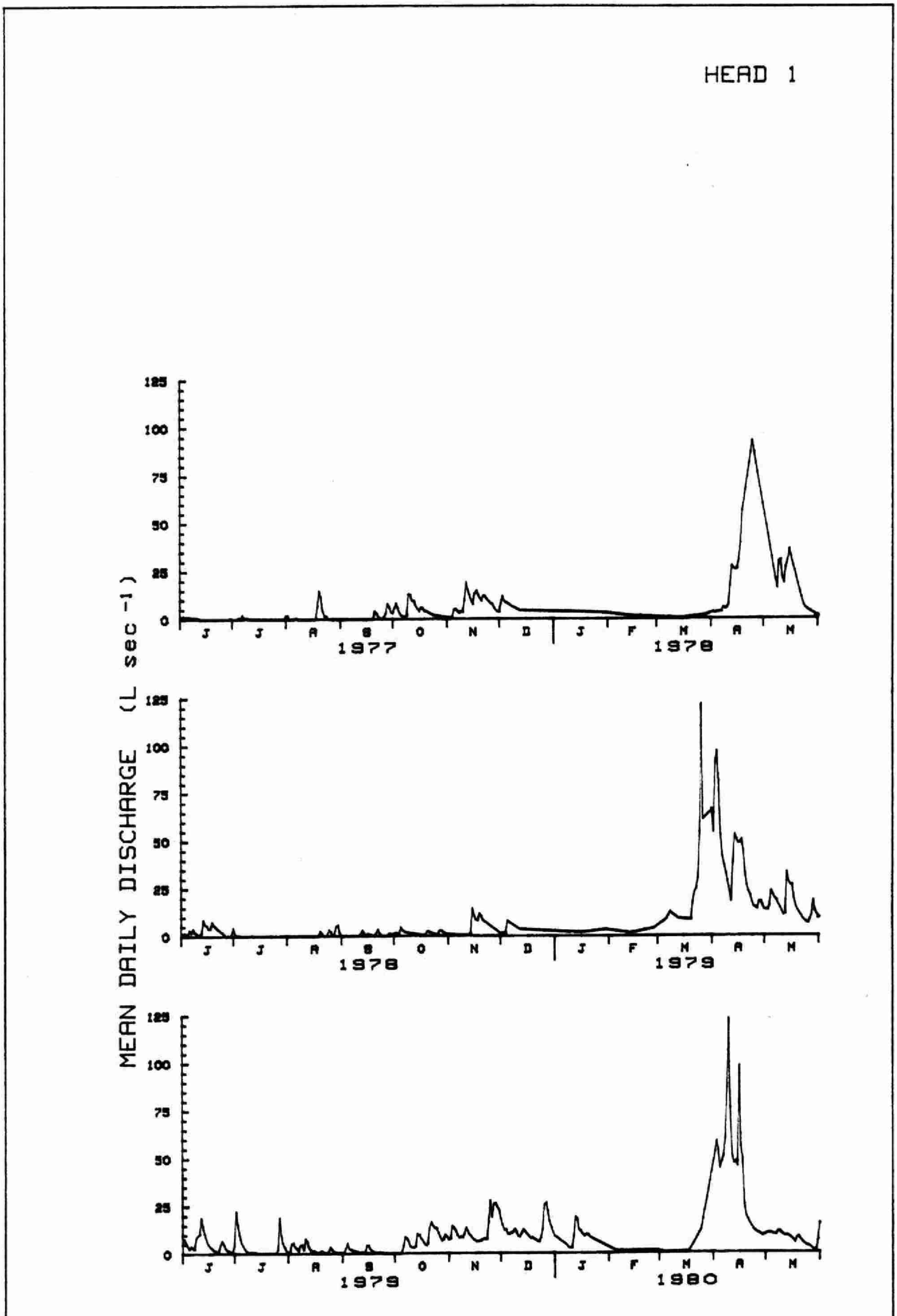
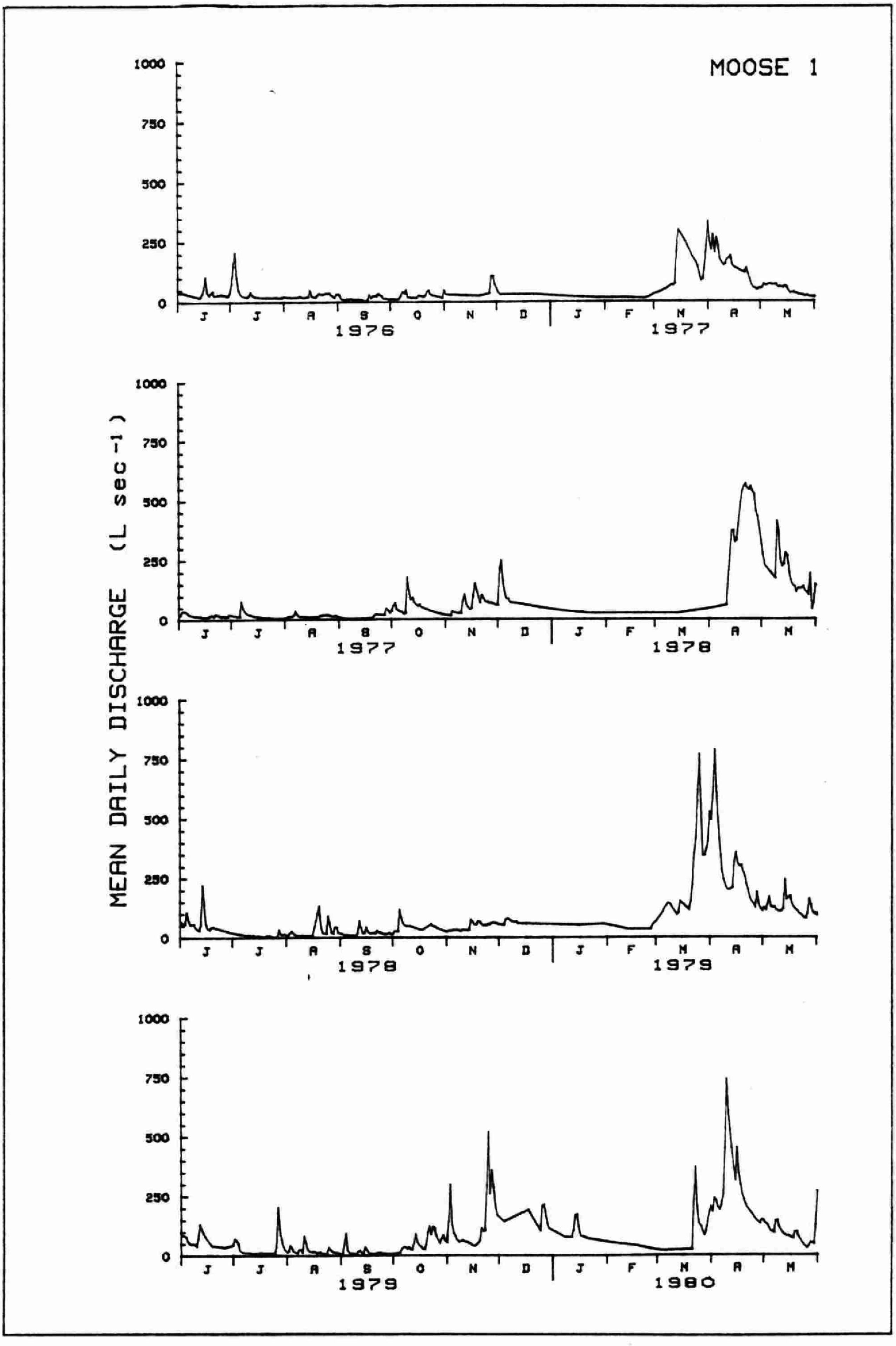

HALIBURTON 12
MEAN DAILY DISCHARGE (L sec -1)
200
150
100
50
0
J J A S O N D J F M A M
1977
1978
1978
1979
1979
1980

FIGURE 134



HEAD 1
MEAN DAILY DISCHARGE (L sec -1)
125
100
75
50
25
0
J J A S O N D J F M A M
1977
1978
1979
1980

FIGURE 135


MOOSE 1
MEAN DAILY DISCHARGE (L sec -1)
1000
750
500
250
0
J J A S O N D J F M A M
1976
1977
1978
1979
1980

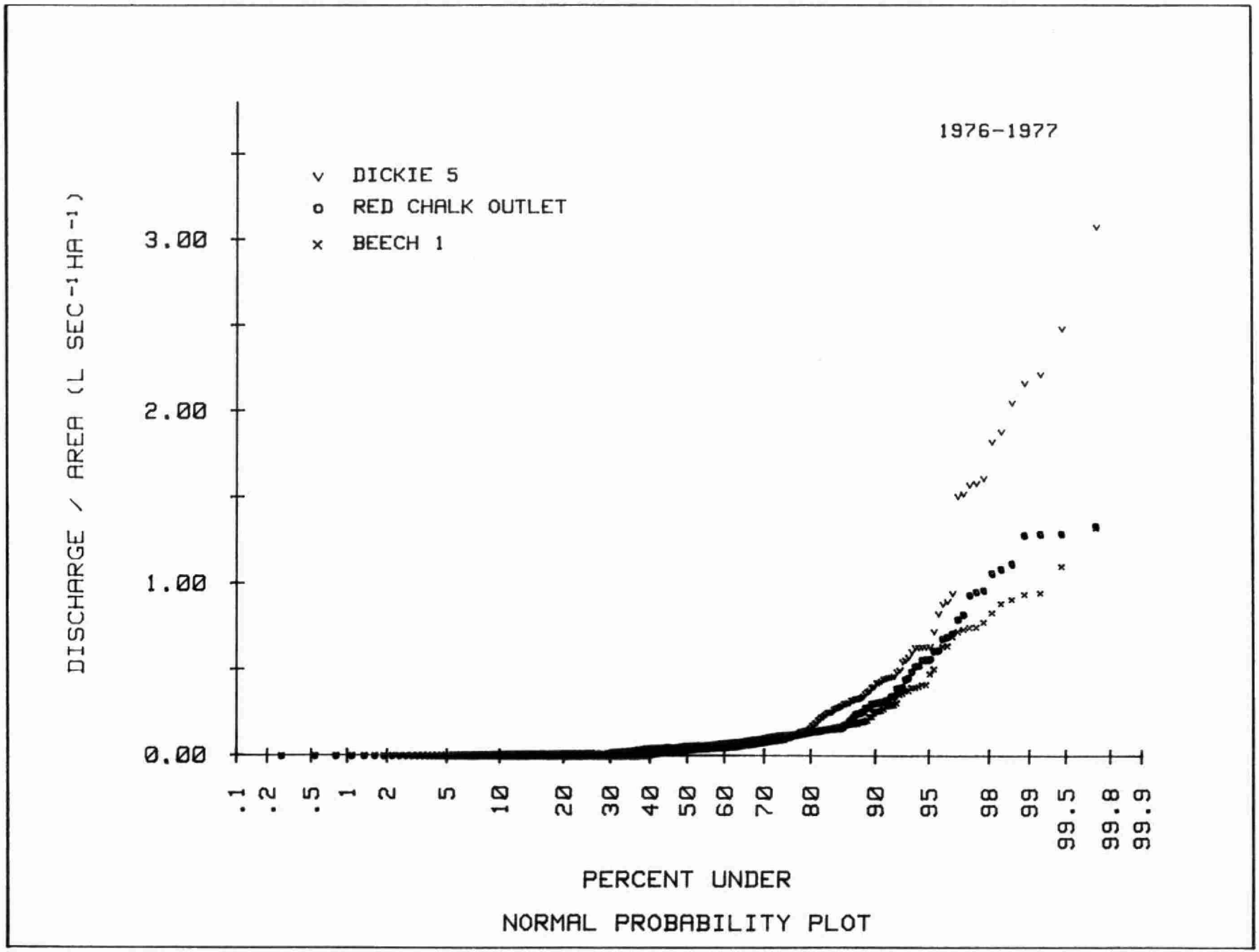

1976-1977
v DICKIE 5
o RED CHALK OUTLET
x BEECH 1
DISCHARGE / AREA (L SEC-1 HA-1)
3.00
2.00
1.00
0.00
.1
.2
.5
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.5
99.8
99.9
PERCENT UNDER
NORMAL PROBABILITY PLOT

FIGURE 136

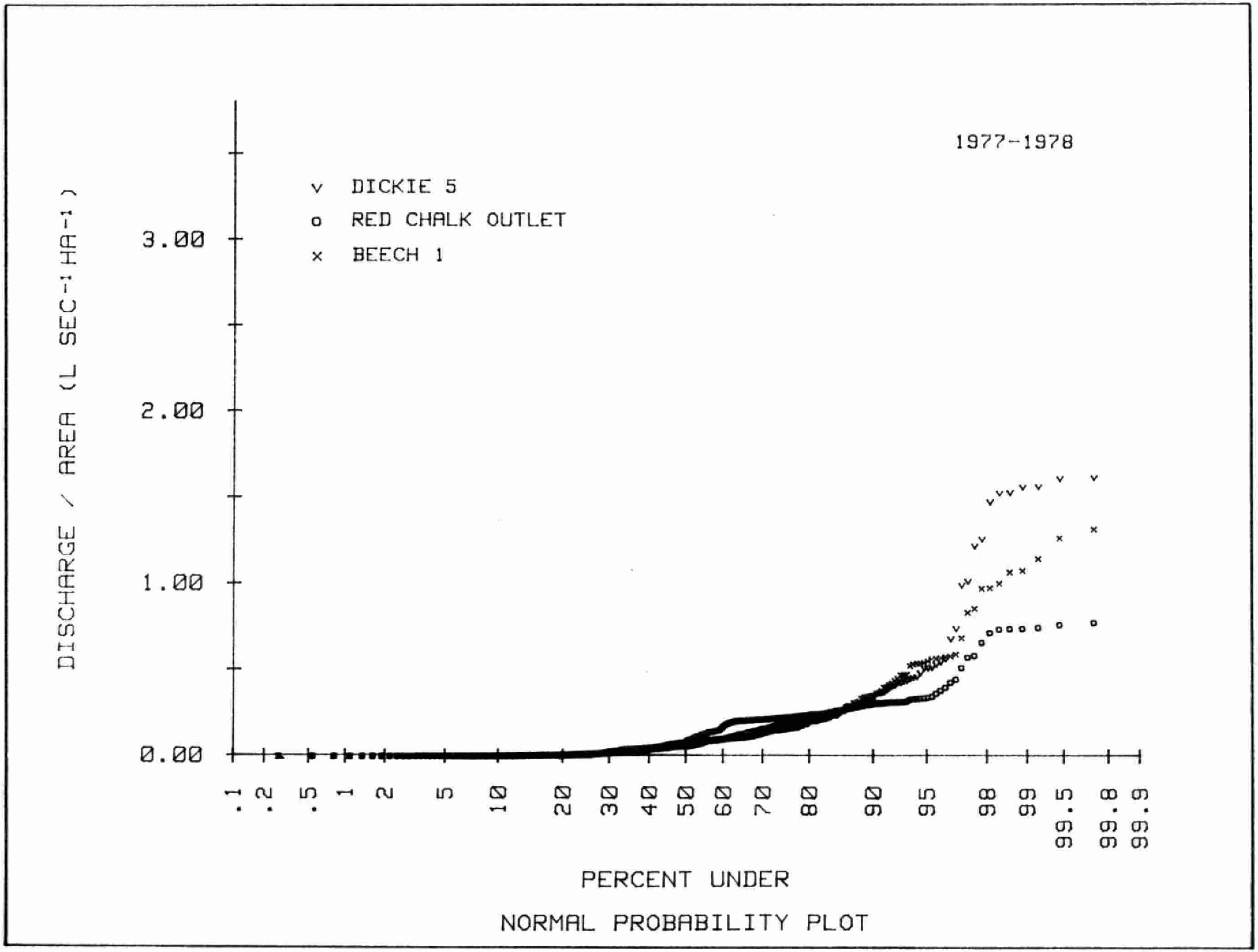

1977-1978
v DICKIE 5
o RED CHALK OUTLET
x BEECH 1
DISCHARGE / AREA (L SEC-1 HA-1)
3.00
2.00
1.00
0.00
.1 .2 .5 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.5 99.8 99.9
PERCENT UNDER
NORMAL PROBABILITY PLOT

FIGURE 137

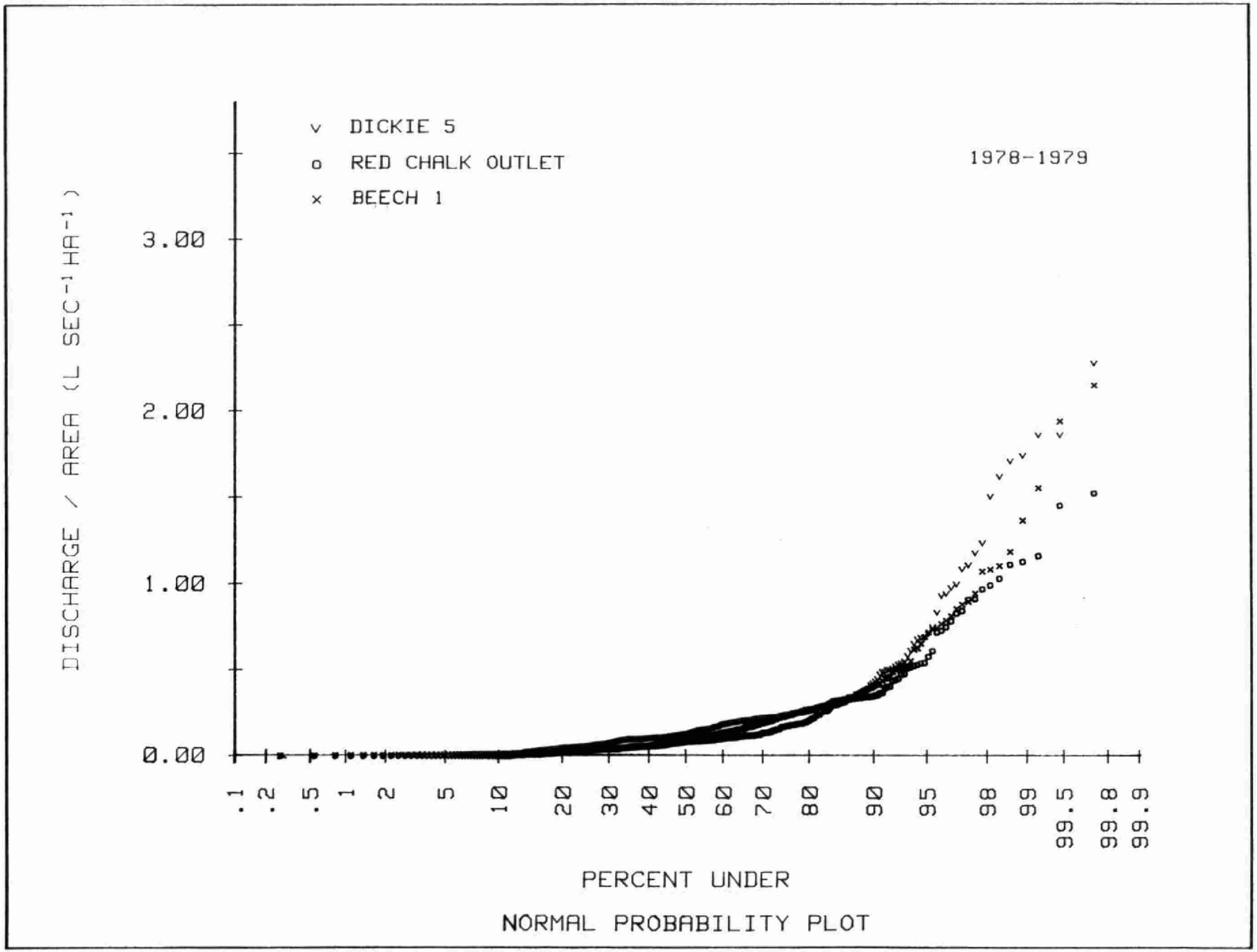

v DICKIE 5
o RED CHALK OUTLET
x BEECH 1
1978-1979
DISCHARGE / AREA (L SEC⁻¹ HA⁻¹)
3.00
2.00
1.00
0.00
.1 .2 .5 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.5 99.8 99.9
PERCENT UNDER
NORMAL PROBABILITY PLOT

FIGURE 138

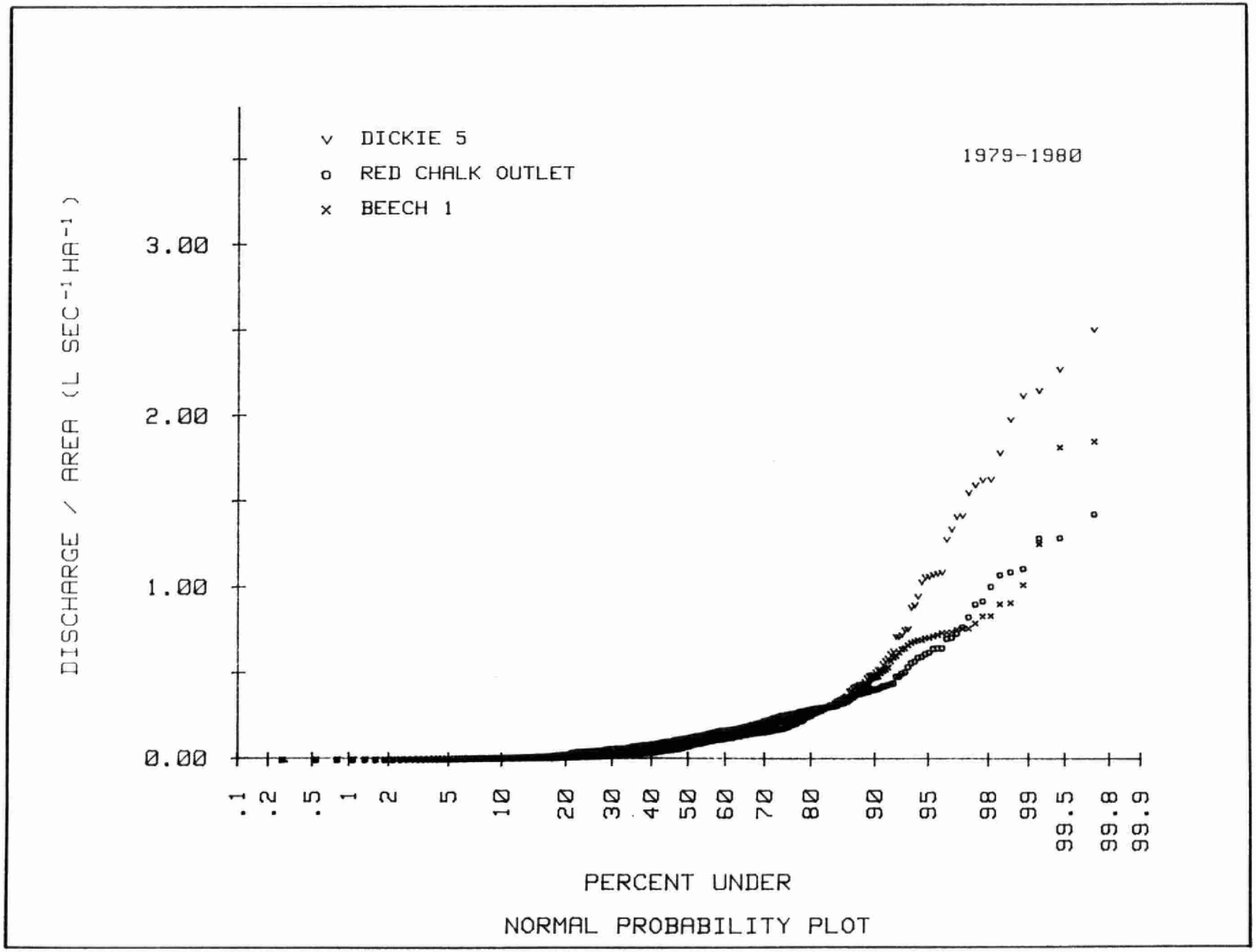

v DICKIE 5
o RED CHALK OUTLET
x BEECH 1
1979-1980
3.00
2.00
1.00
0.00
DISCHARGE / AREA (L SEC⁻¹ HA⁻¹)
.1 .2 .5 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.5 99.8 99.9
PERCENT UNDER
NORMAL PROBABILITY PLOT

FIGURE 139

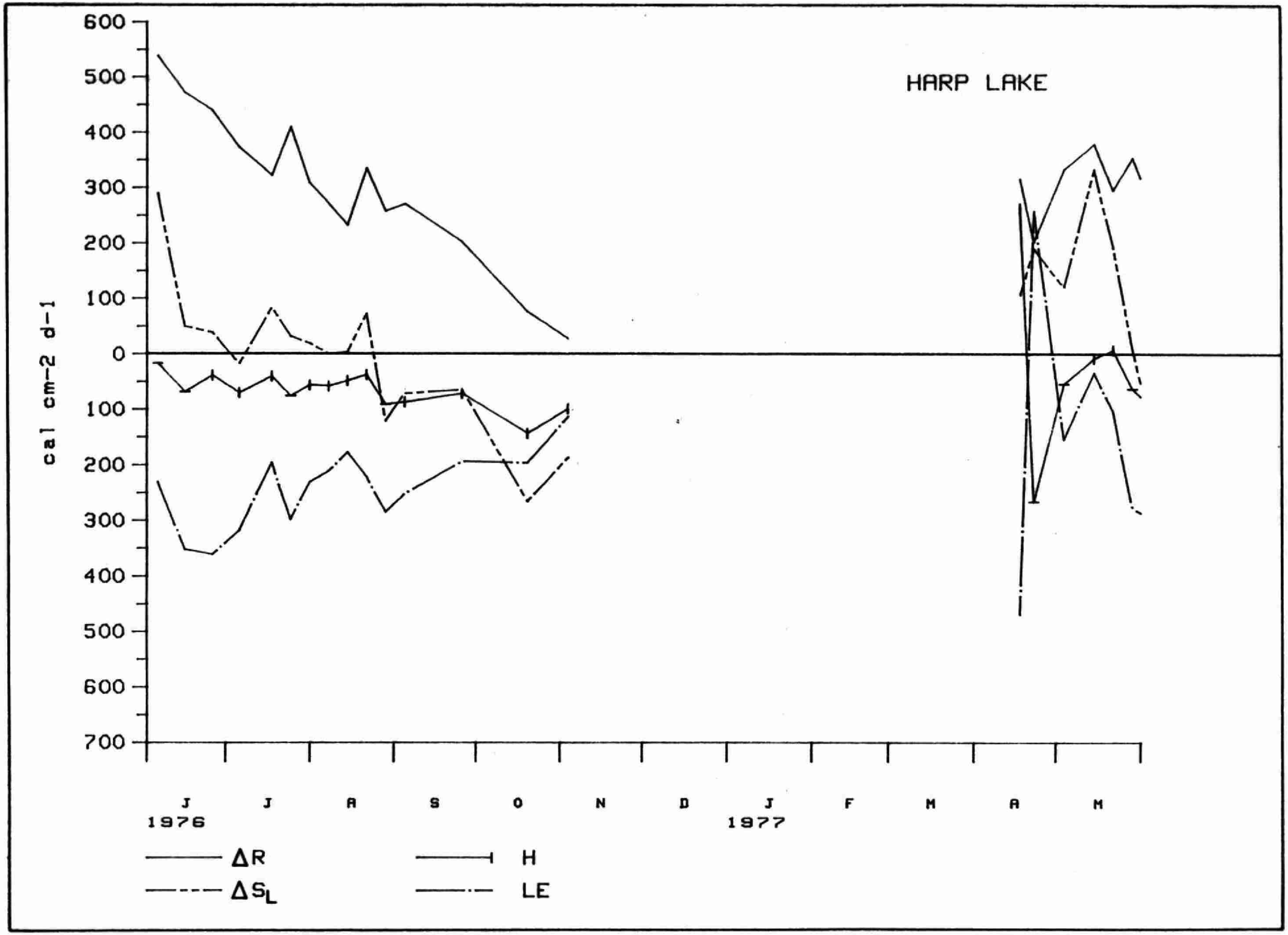

HARP LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J J A S O N D J F M A M
1976
1977
ΔR
H
ΔS_L
LE

FIGURE 140

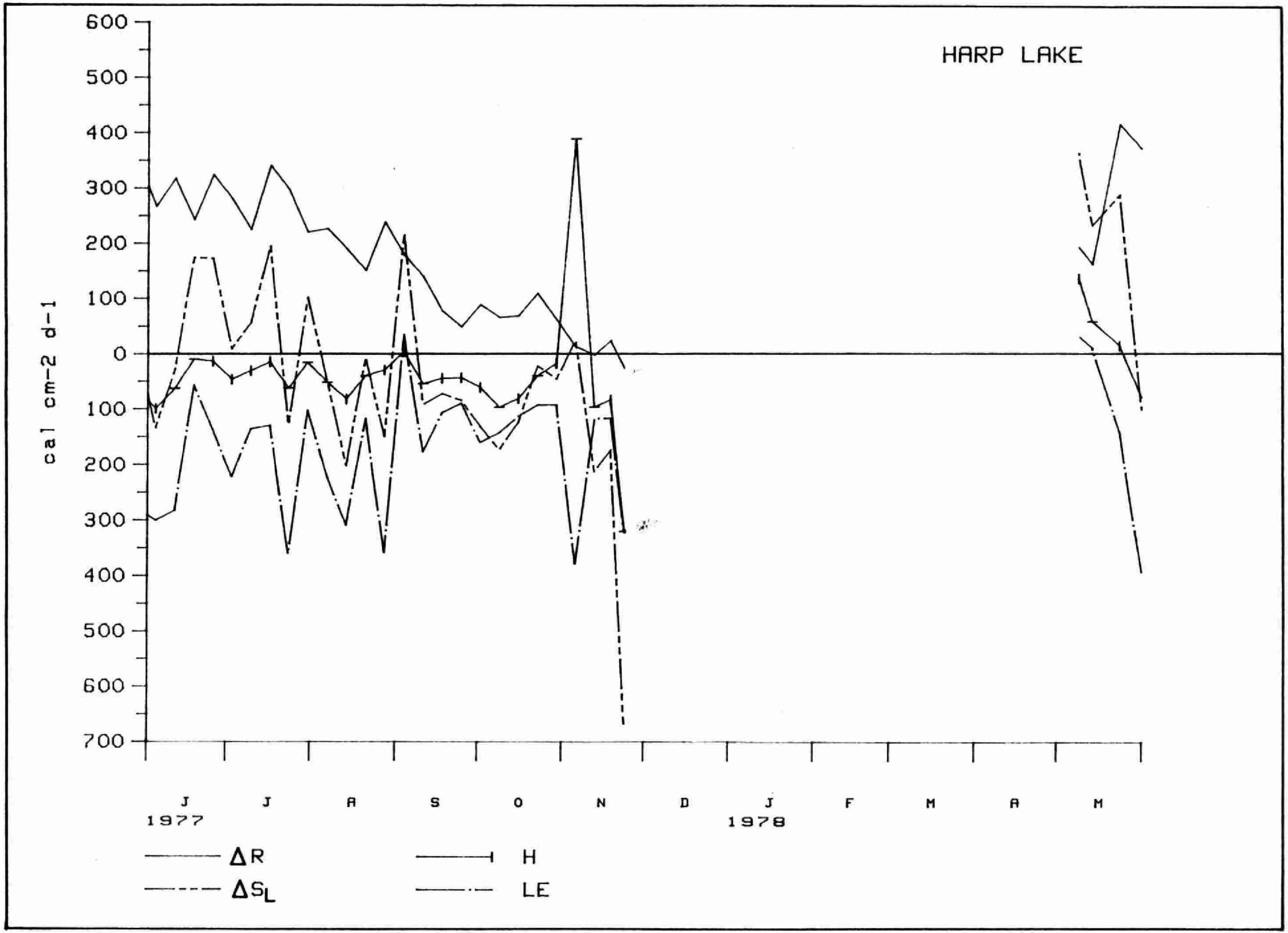
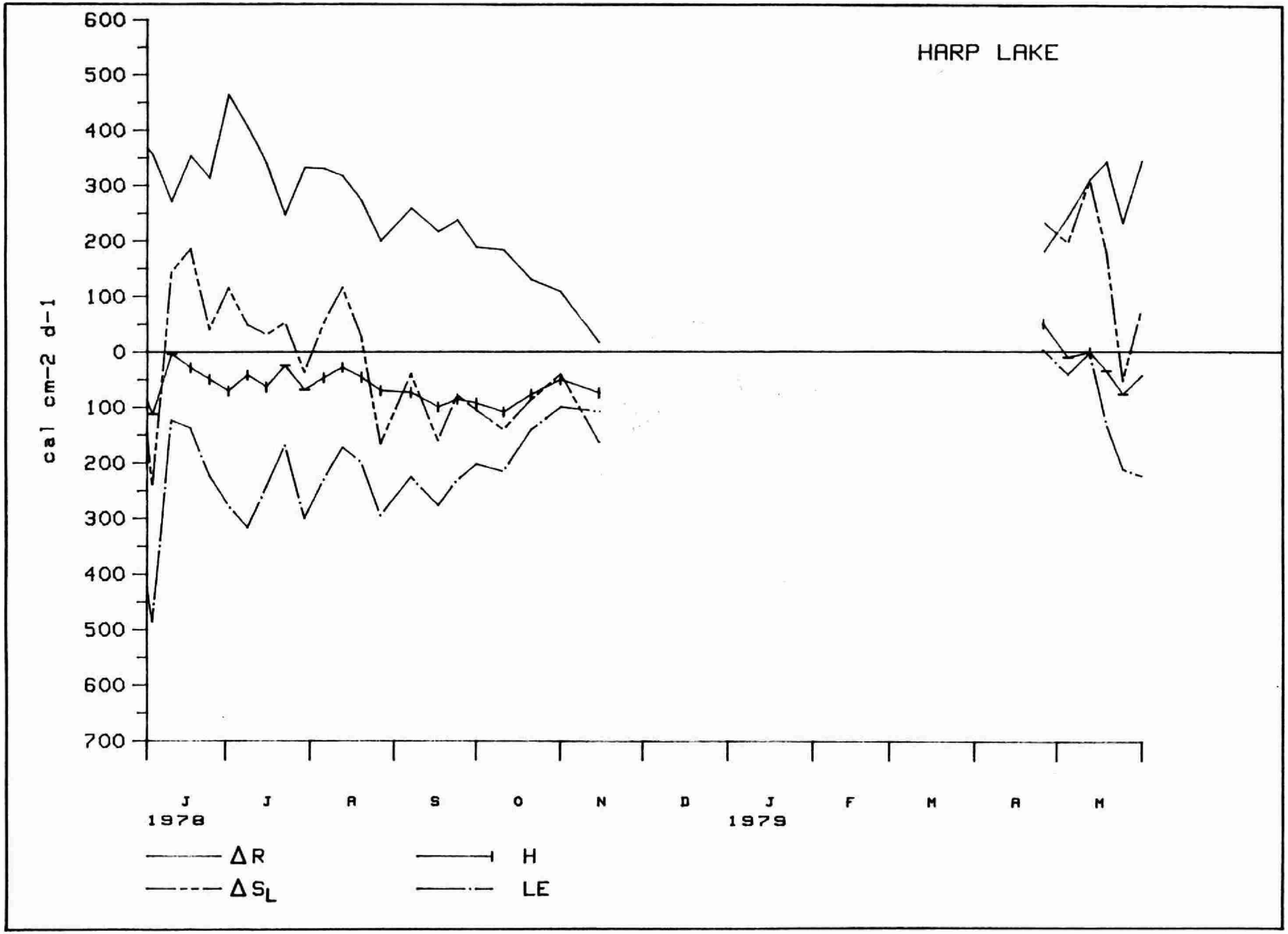

HARP LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J J A S O N D J F M A M
1977
1978
ΔR
H
ΔS_L
LE

FIGURE 141



HARP LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1978
1979
ΔR
H
ΔS_L
LE

FIGURE 142

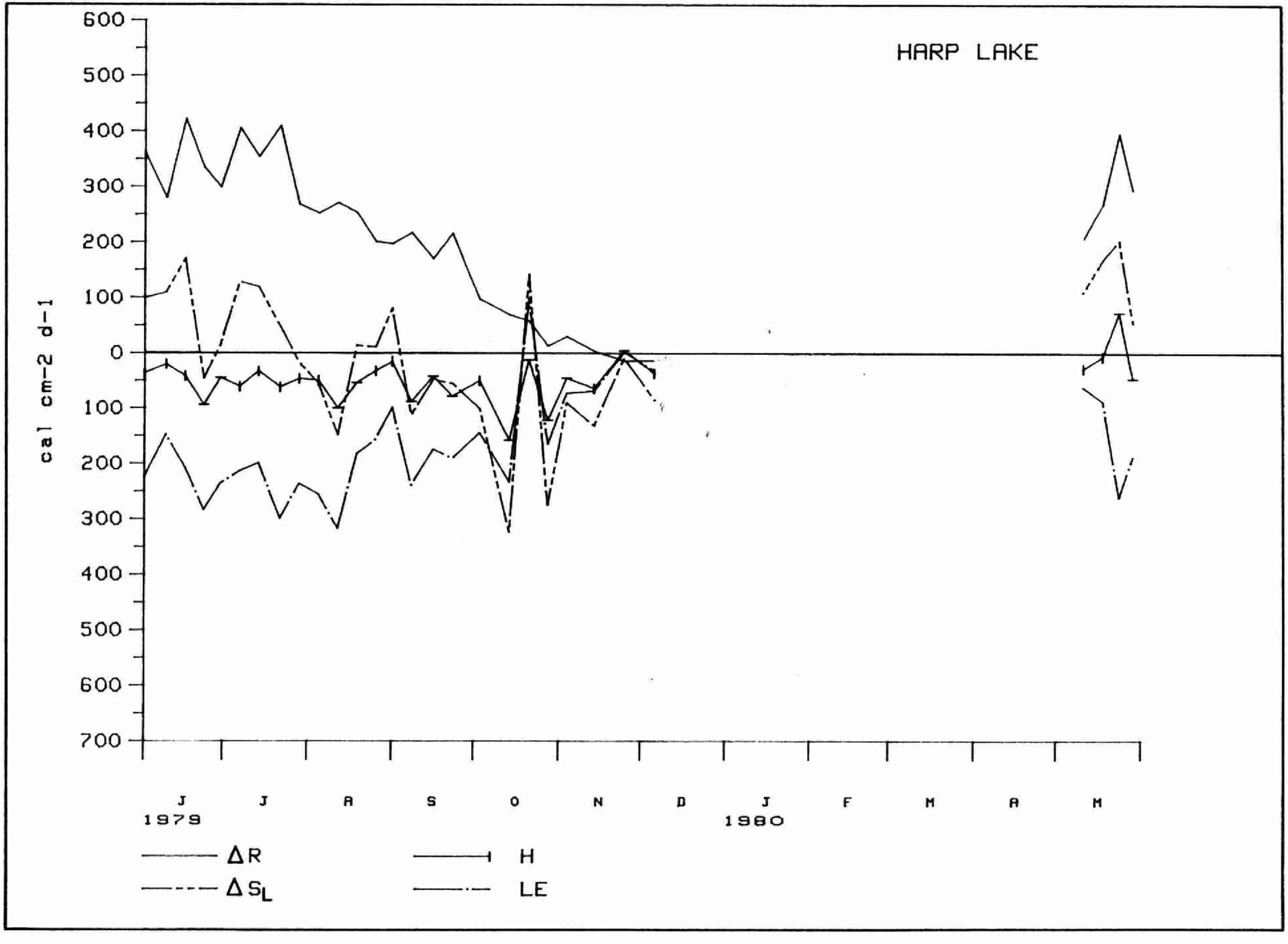
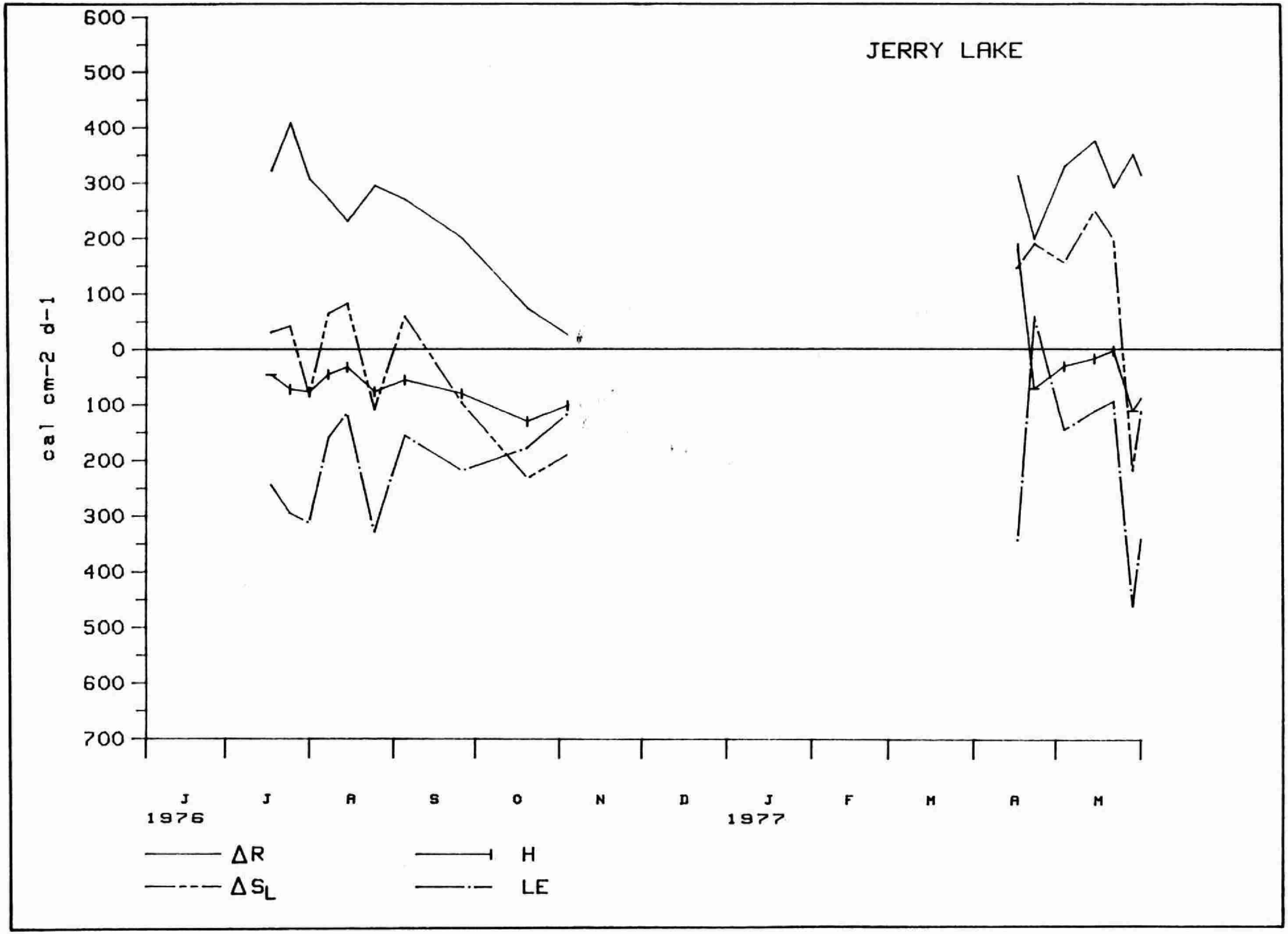

HARP LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1979
1980
ΔR
ΔS_L
H
LE

FIGURE 143



JERRY LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
1976
J
A
S
O
N
D
J
1977
F
M
A
M
ΔR
H
ΔS_L
LE

FIGURE 144

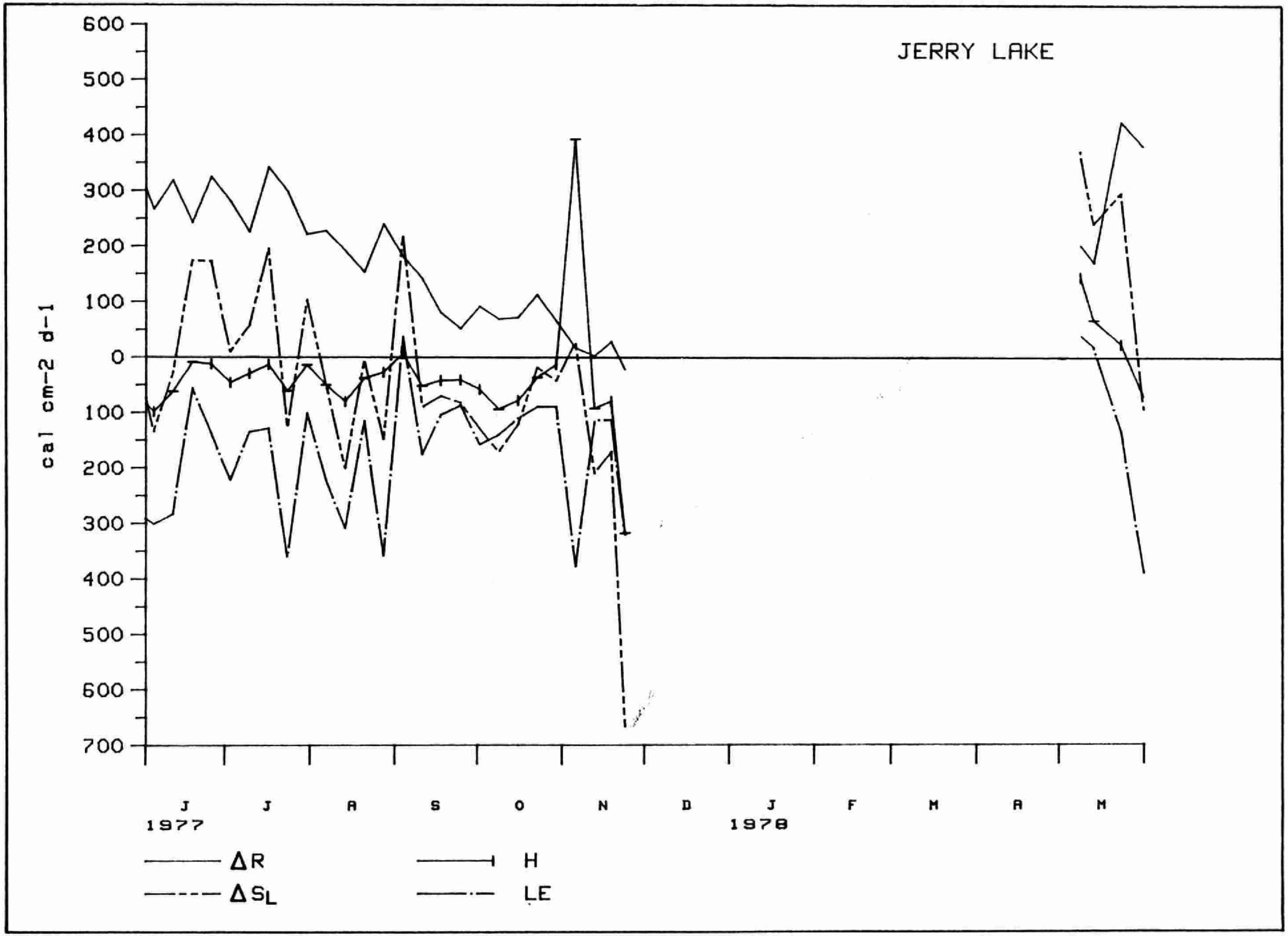

JERRY LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1977
1978
ΔR
H
ΔS_L
LE

FIGURE 145

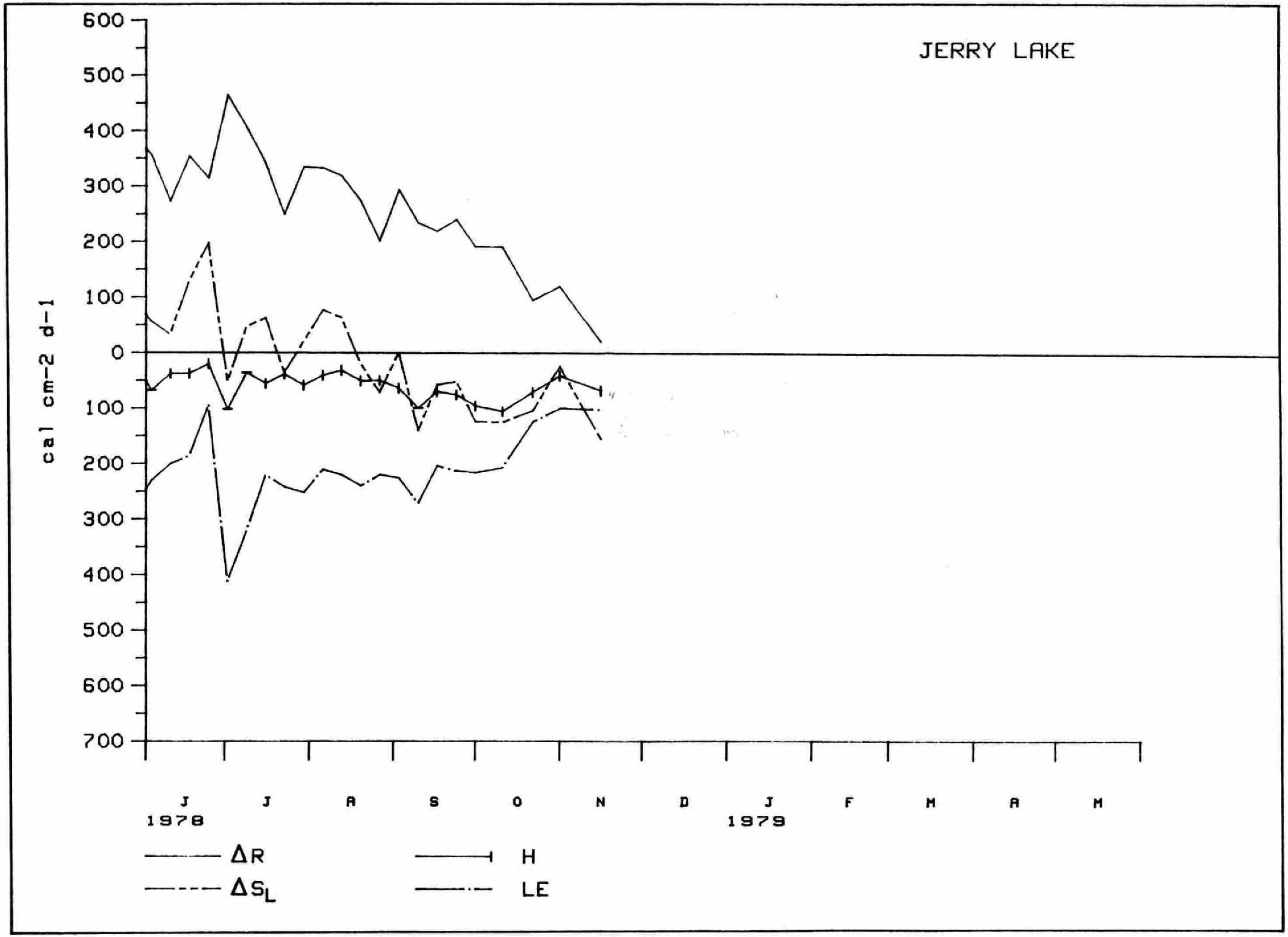

JERRY LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1978
1979
ΔR
H
ΔS_L
LE

FIGURE 146

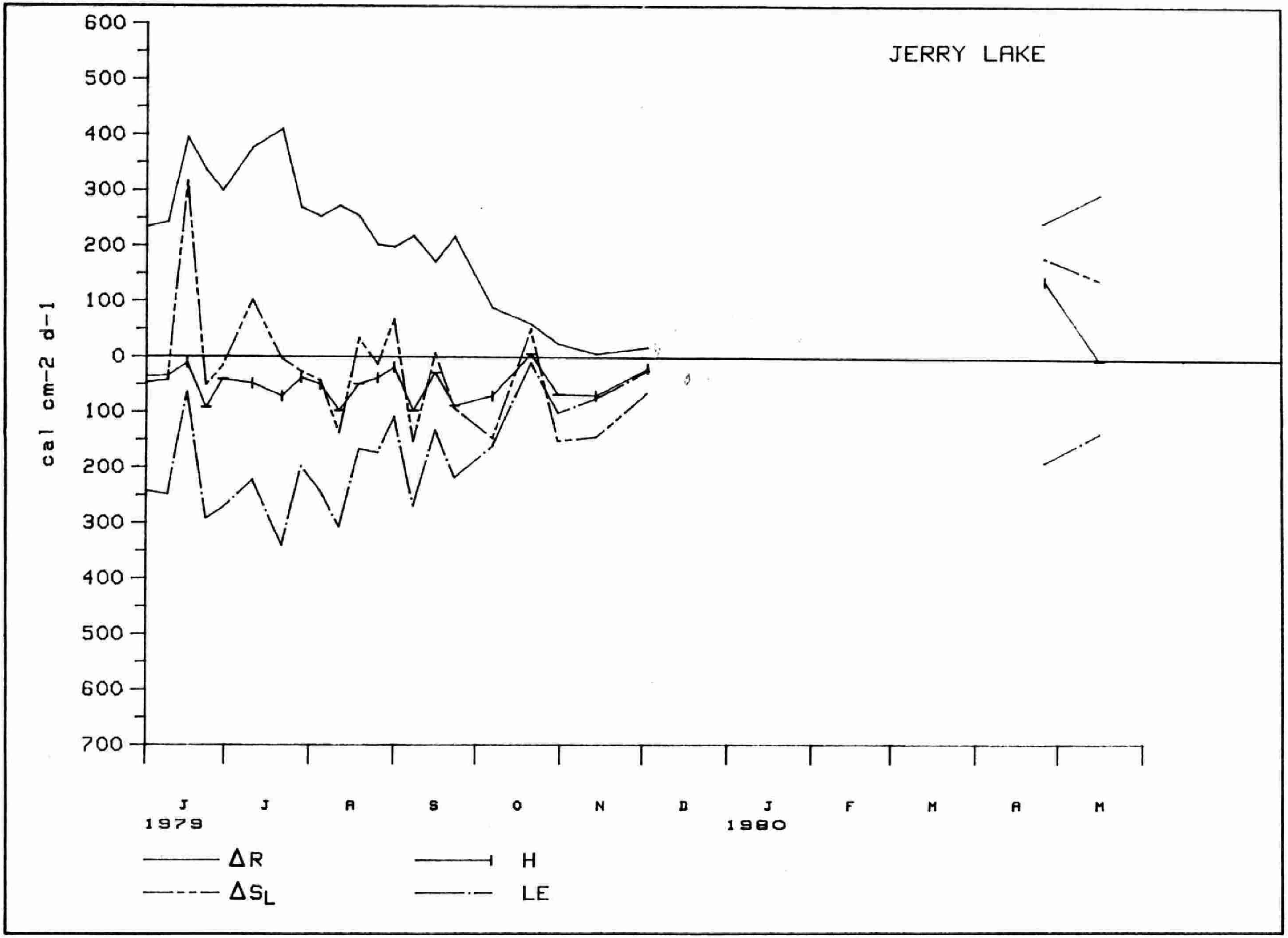

JERRY LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
1979
J
A
S
O
N
D
J
1980
F
M
A
M
ΔR
ΔS_L
H
LE

FIGURE 147

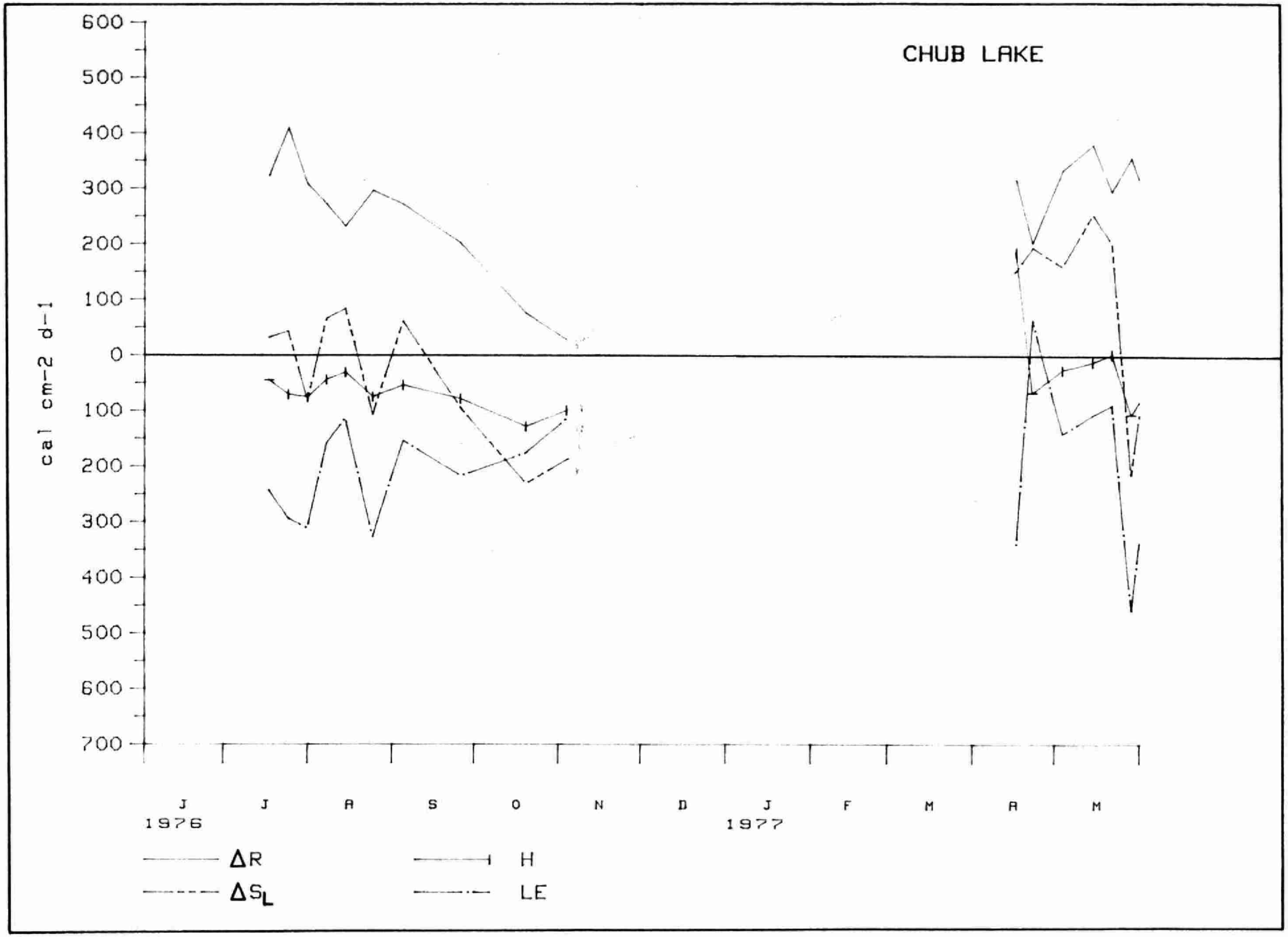

CHUB LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J J A S O N D J F M A M
1976
1977
ΔR
H
ΔS_L
LE

FIGURE 148

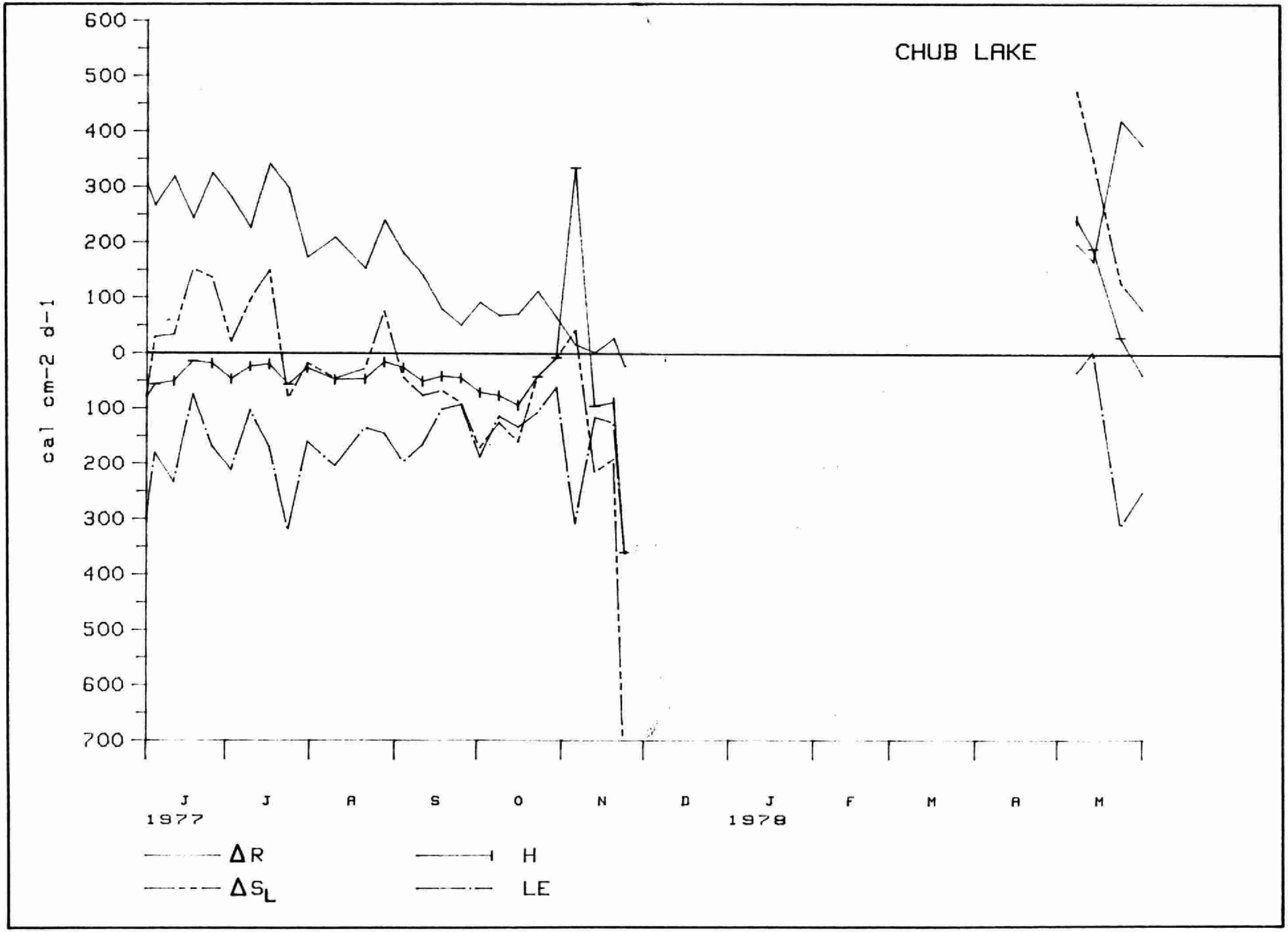

CHUB LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1977
1978
ΔR
H
ΔS_L
LE

FIGURE 149

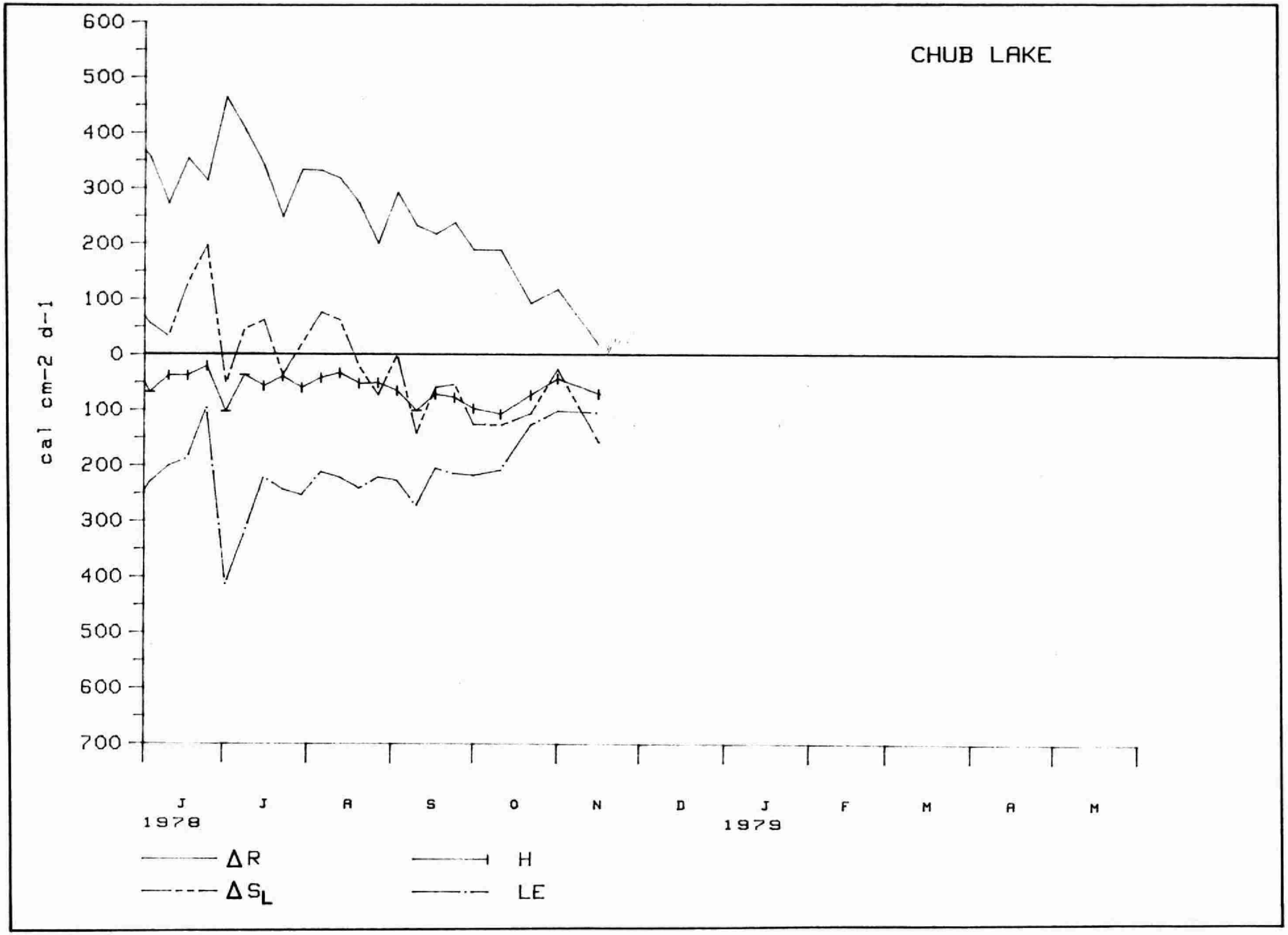

CHUB LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1978
1979
ΔR
ΔS_L
H
LE

FIGURE 150

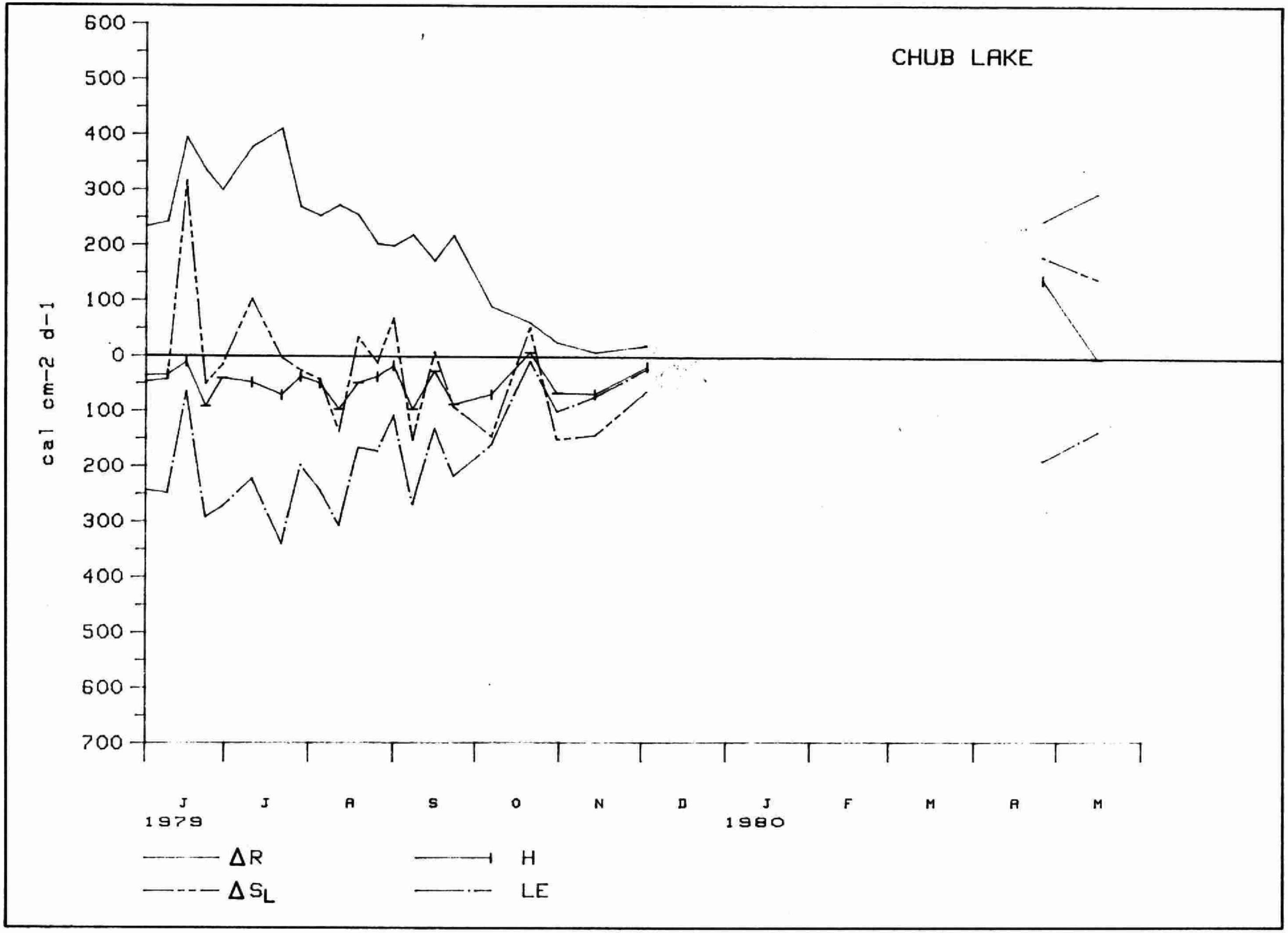
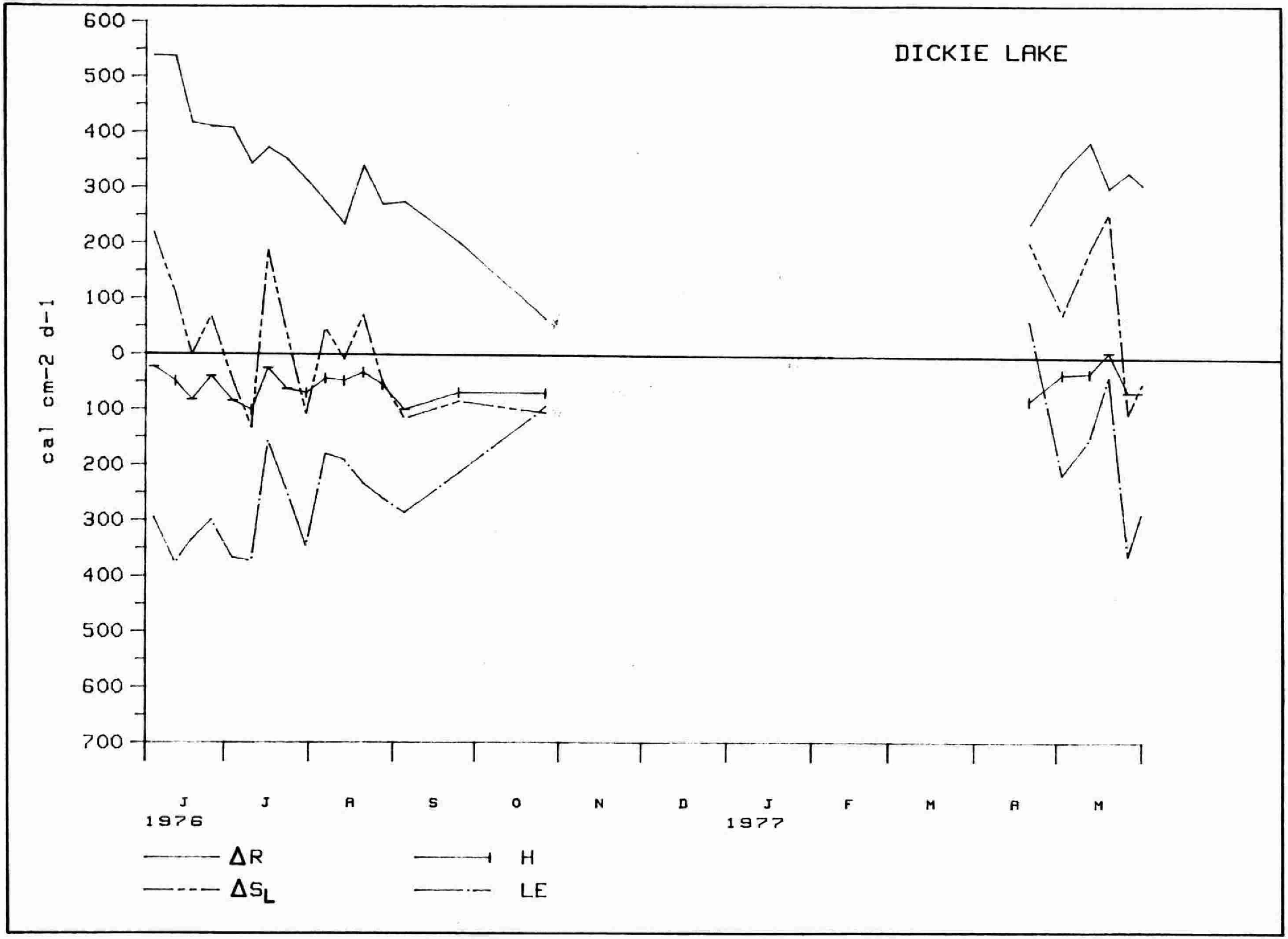

CHUB LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1979
1980
ΔR
H
ΔS_L
LE

FIGURE 151



DICKIE LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1976
1977
ΔR
H
ΔS_L
LE

FIGURE 152

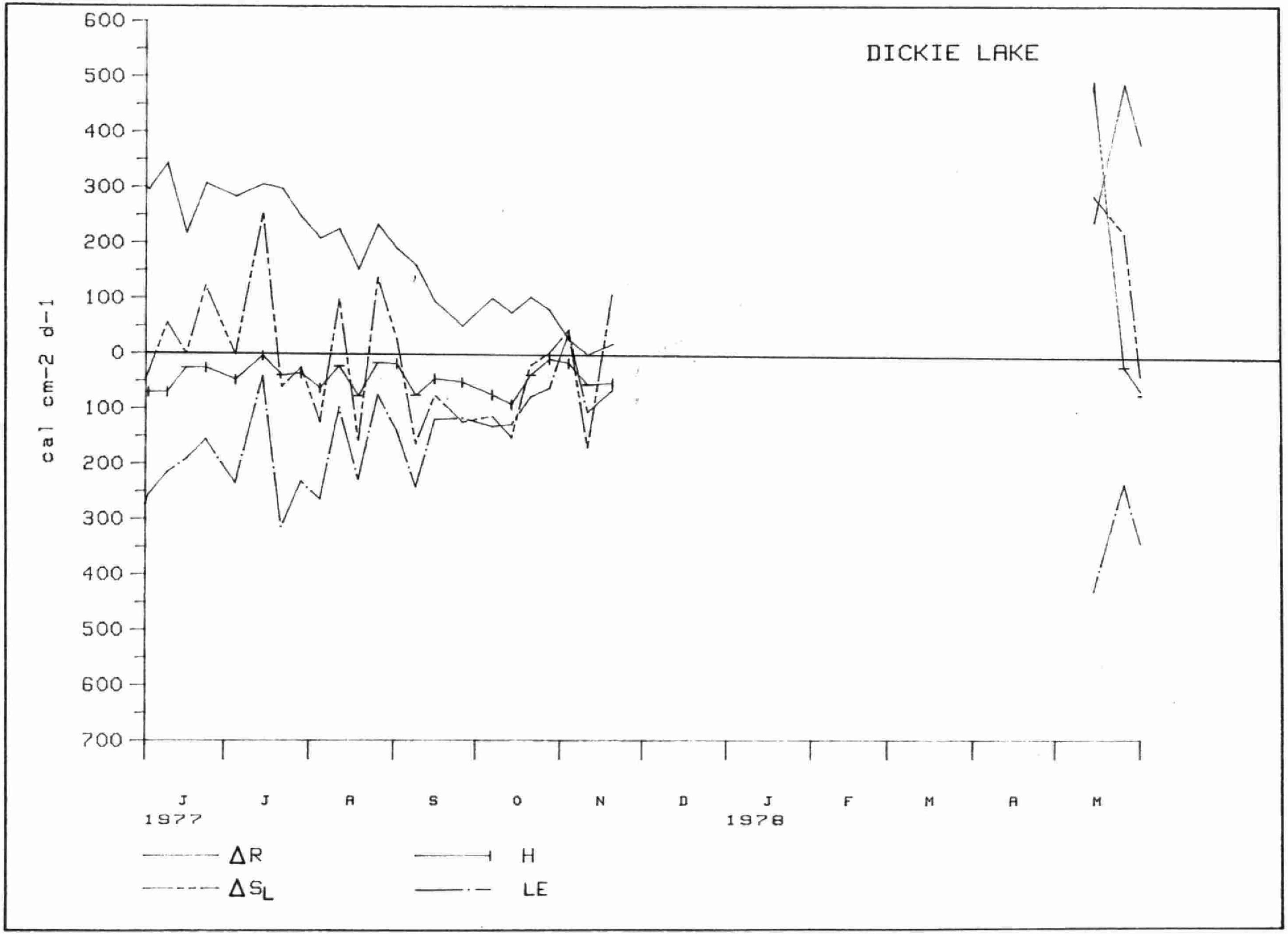

DICKIE LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
1977
J
A
S
O
N
D
J
1978
F
M
A
M
ΔR
ΔS_L
H
LE

FIGURE 153

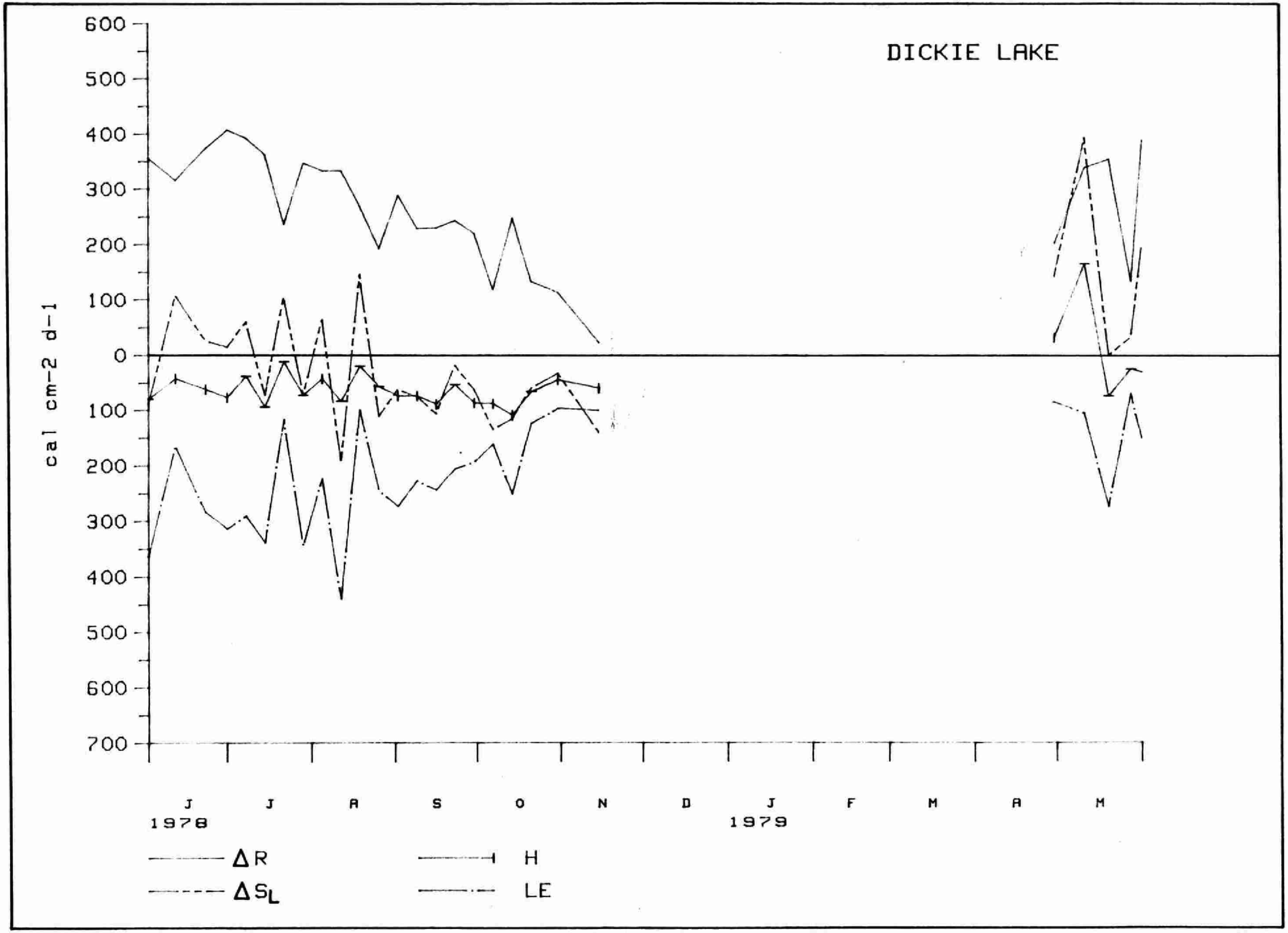
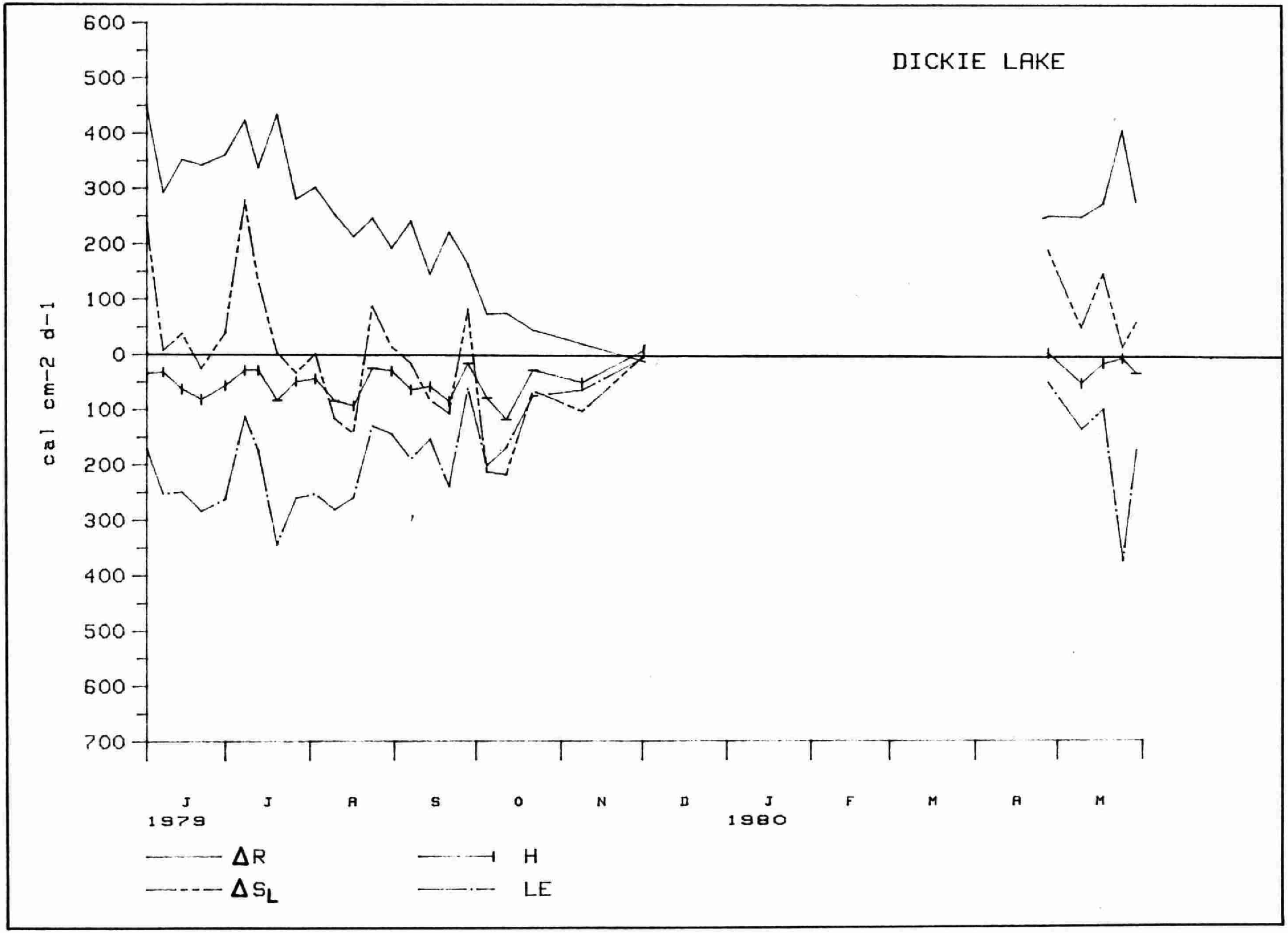

DICKIE LAKE
600
500
400
300
200
100
0
100
200
300
400
500
600
700
cal cm-2 d-1
J
J
A
S
O
N
D
J
F
M
A
M
1978
1979
ΔR
H
ΔS_L
LE

FIGURE 154



DICKIE LAKE
600
500
400
300
200
100
0
100
200
300
400
500
600
700
cal cm-2 d-1
J
J
A
S
O
N
D
J
F
M
A
M
1979
1980
ΔR
ΔS_L
H
LE

FIGURE 155

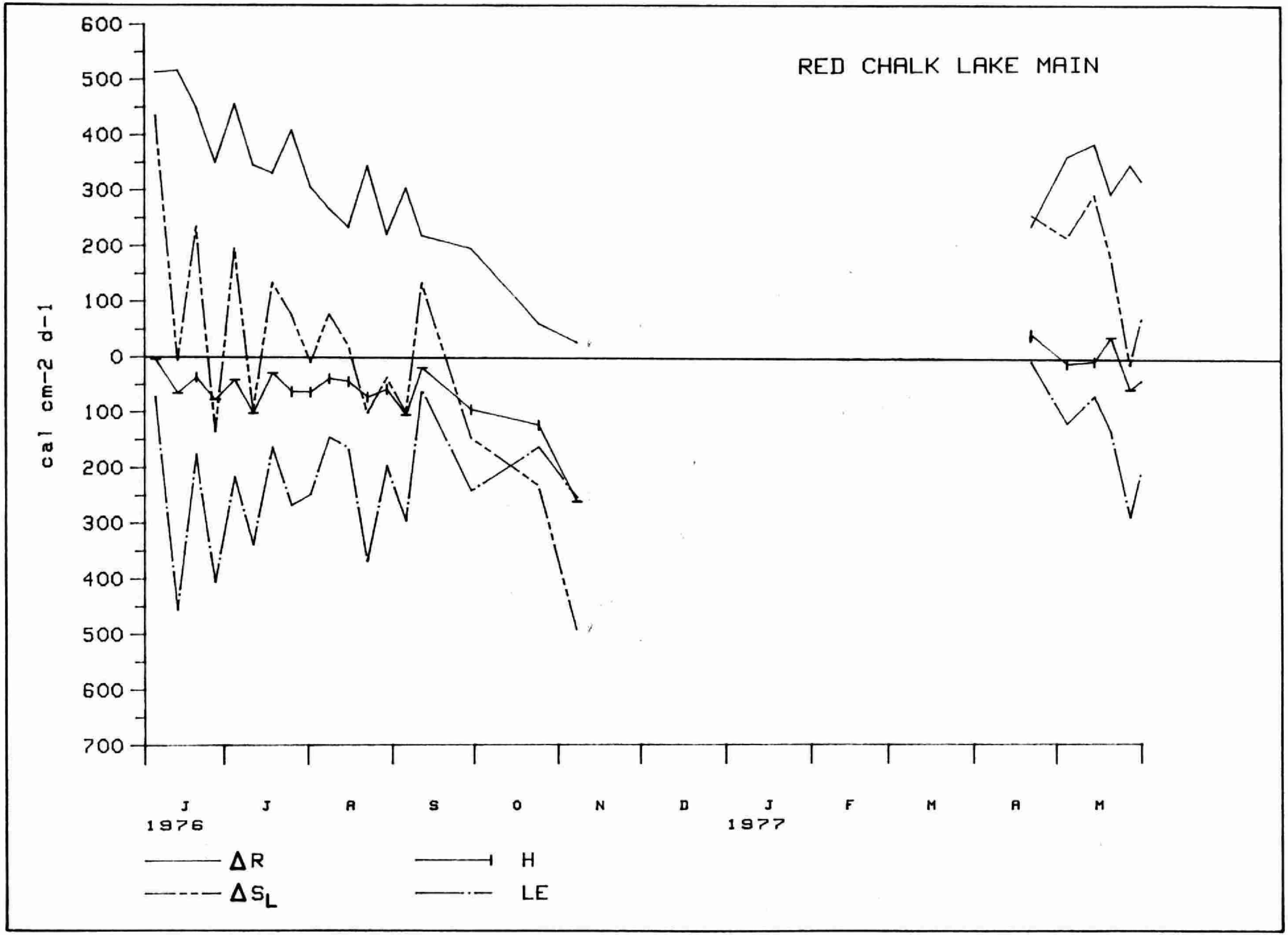

RED CHALK LAKE MAIN
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1976
1977
ΔR
H
ΔS_L
LE

FIGURE 156

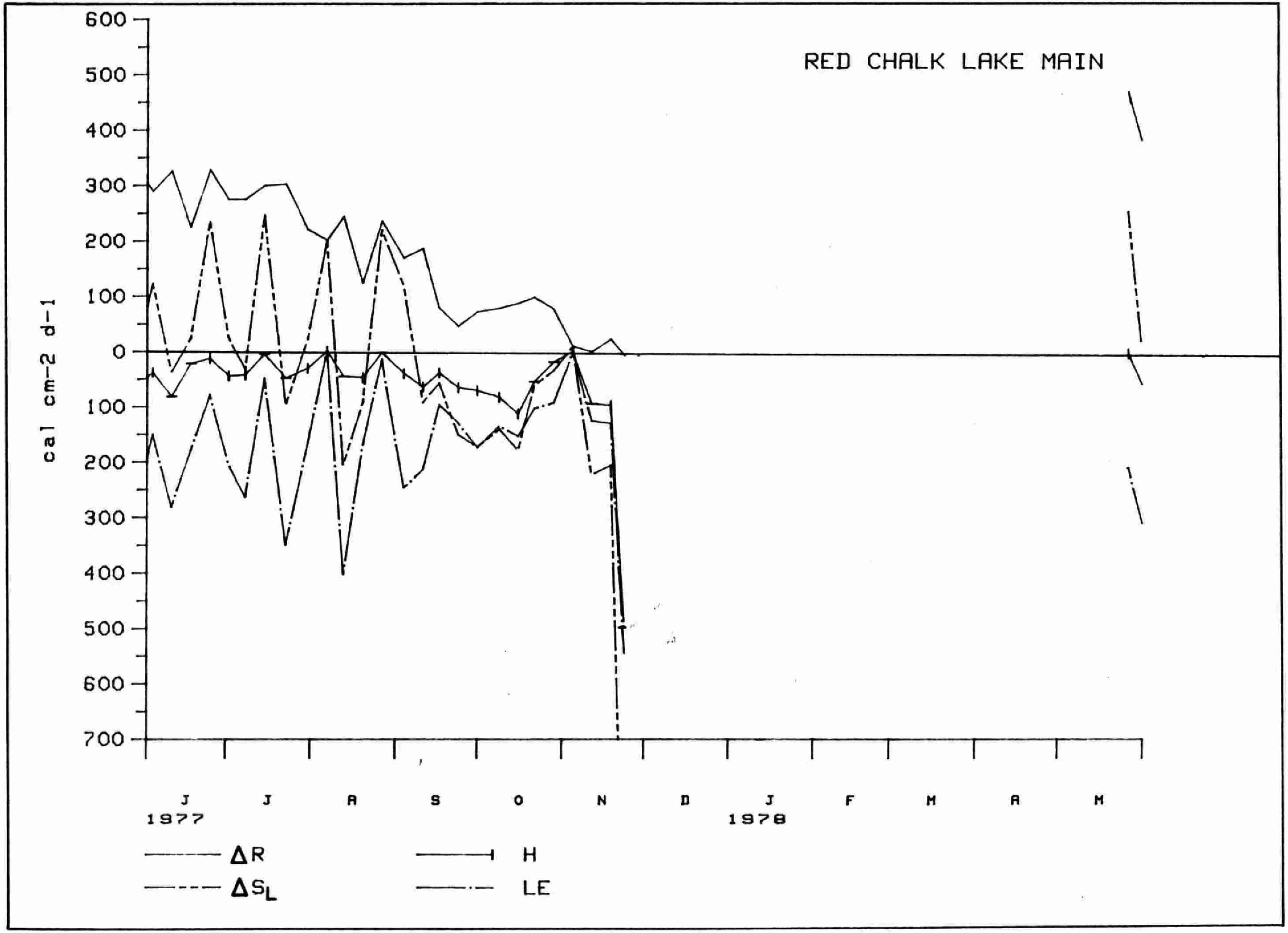
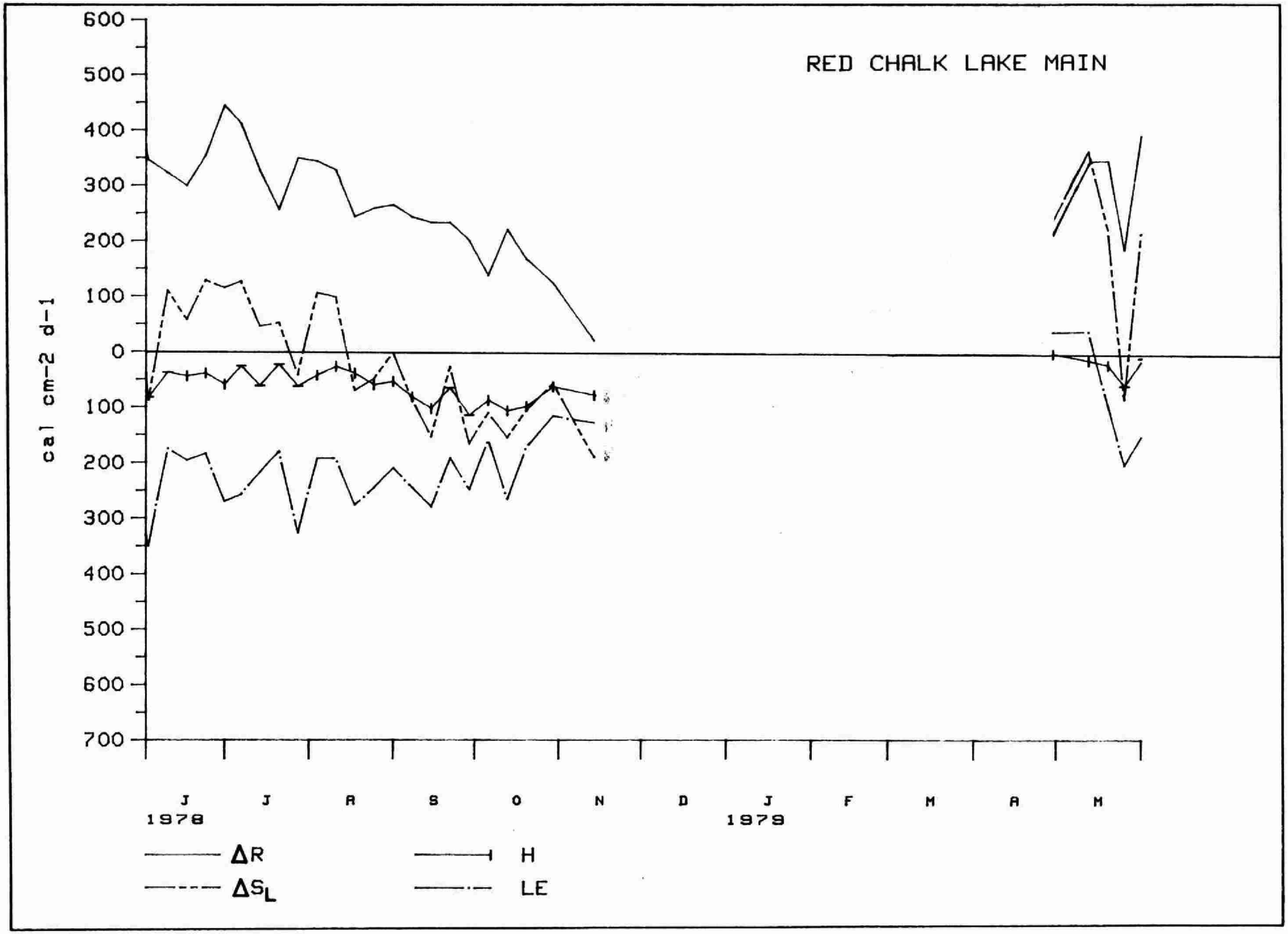
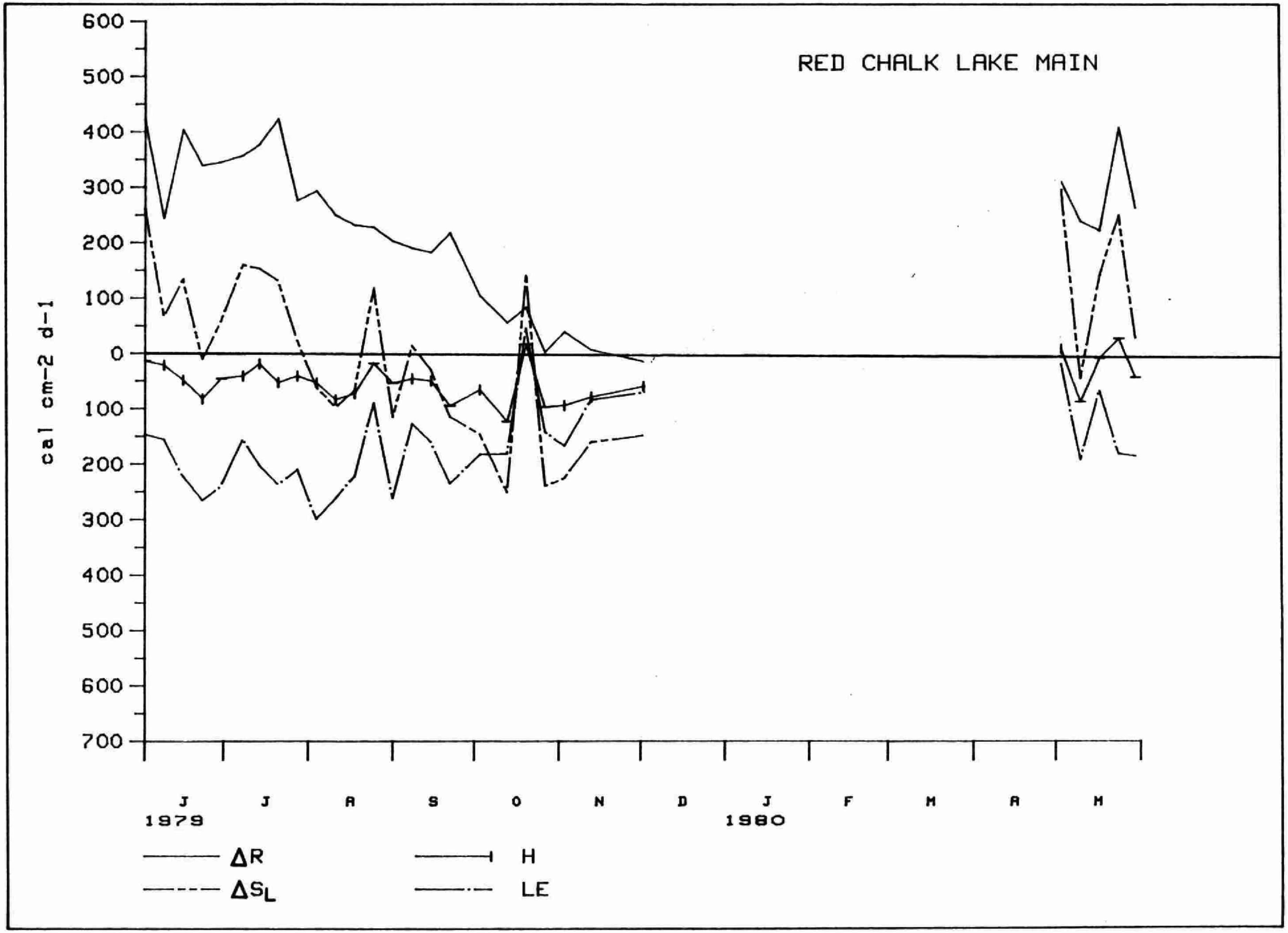

RED CHALK LAKE MAIN
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
1977
J
A
S
O
N
D
J
1978
F
M
A
M
ΔR
H
ΔS_L
LE

FIGURE 157



RED CHALK LAKE MAIN
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1978
1979
ΔR
ΔS_L
H
LE

FIGURE 158



RED CHALK LAKE MAIN
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1979
1980
ΔR
H
ΔS_L
LE

FIGURE 159

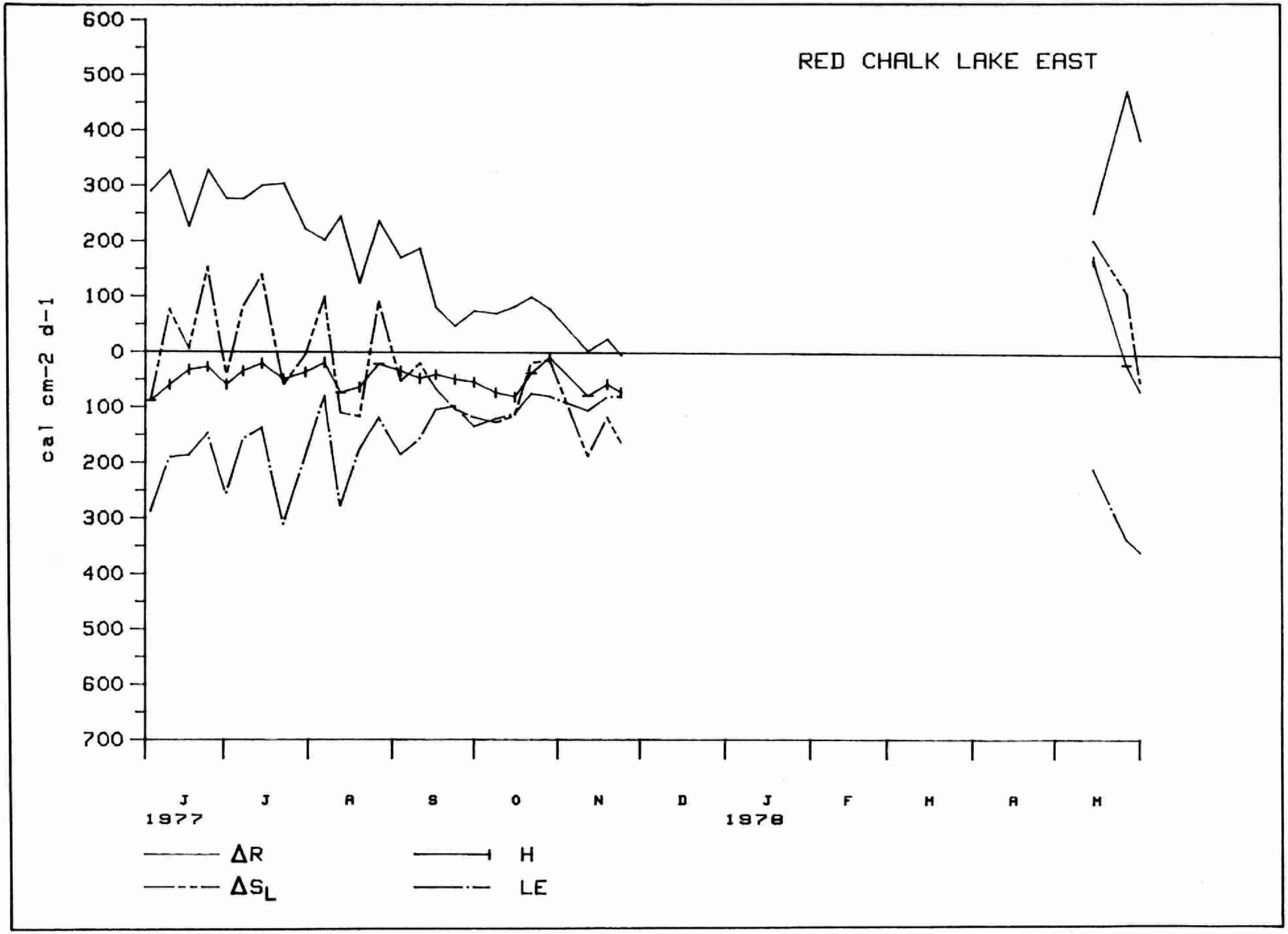

RED CHALK LAKE EAST
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1977
1978
ΔR
H
ΔS_L
LE

FIGURE 160

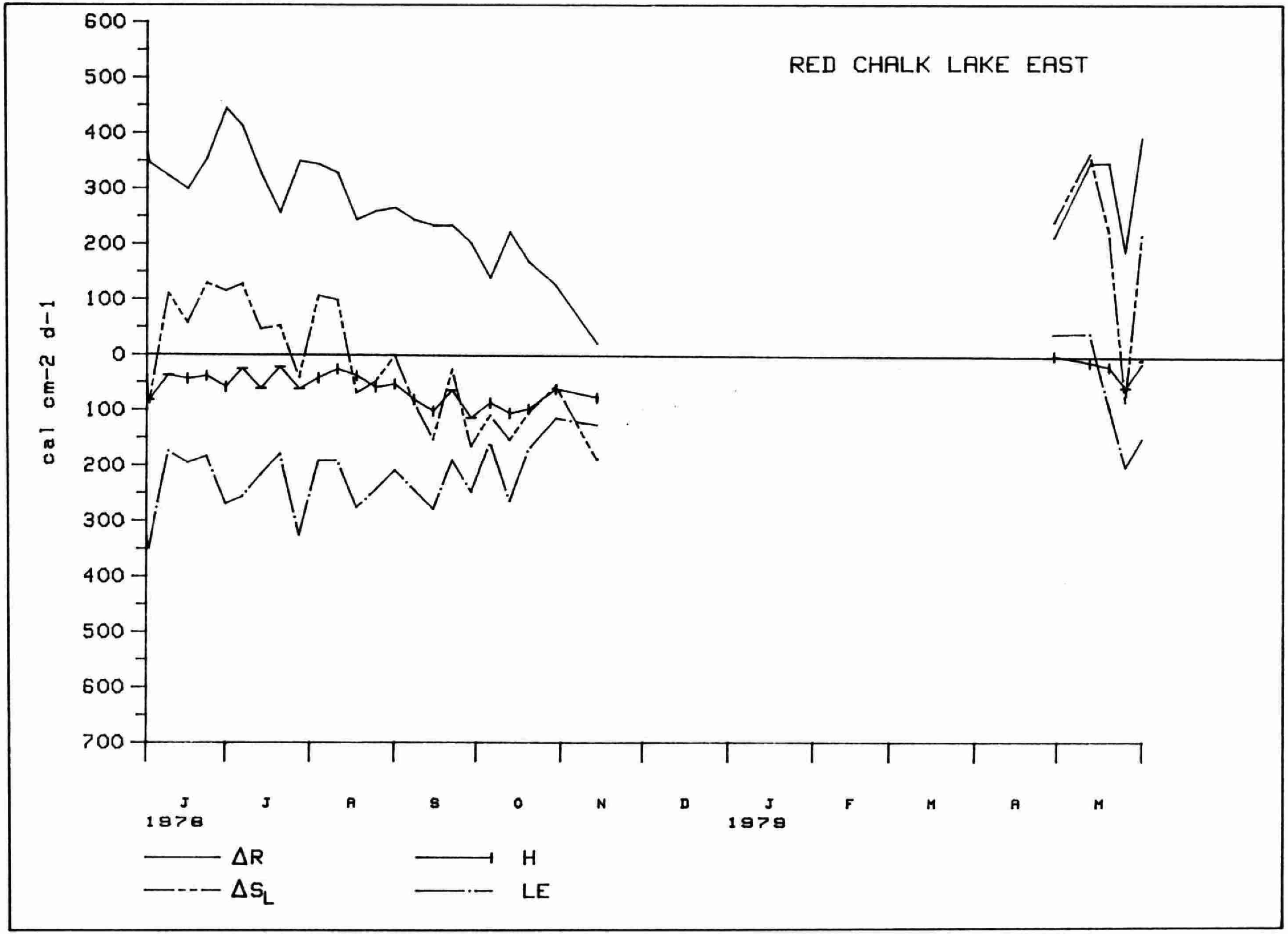

RED CHALK LAKE EAST
600
500
400
300
200
100
0
100
200
300
400
500
600
700
cal cm-2 d-1
J
1978
J
A
S
O
N
D
J
1979
F
M
A
M
ΔR
H
ΔS_L
LE

FIGURE 161

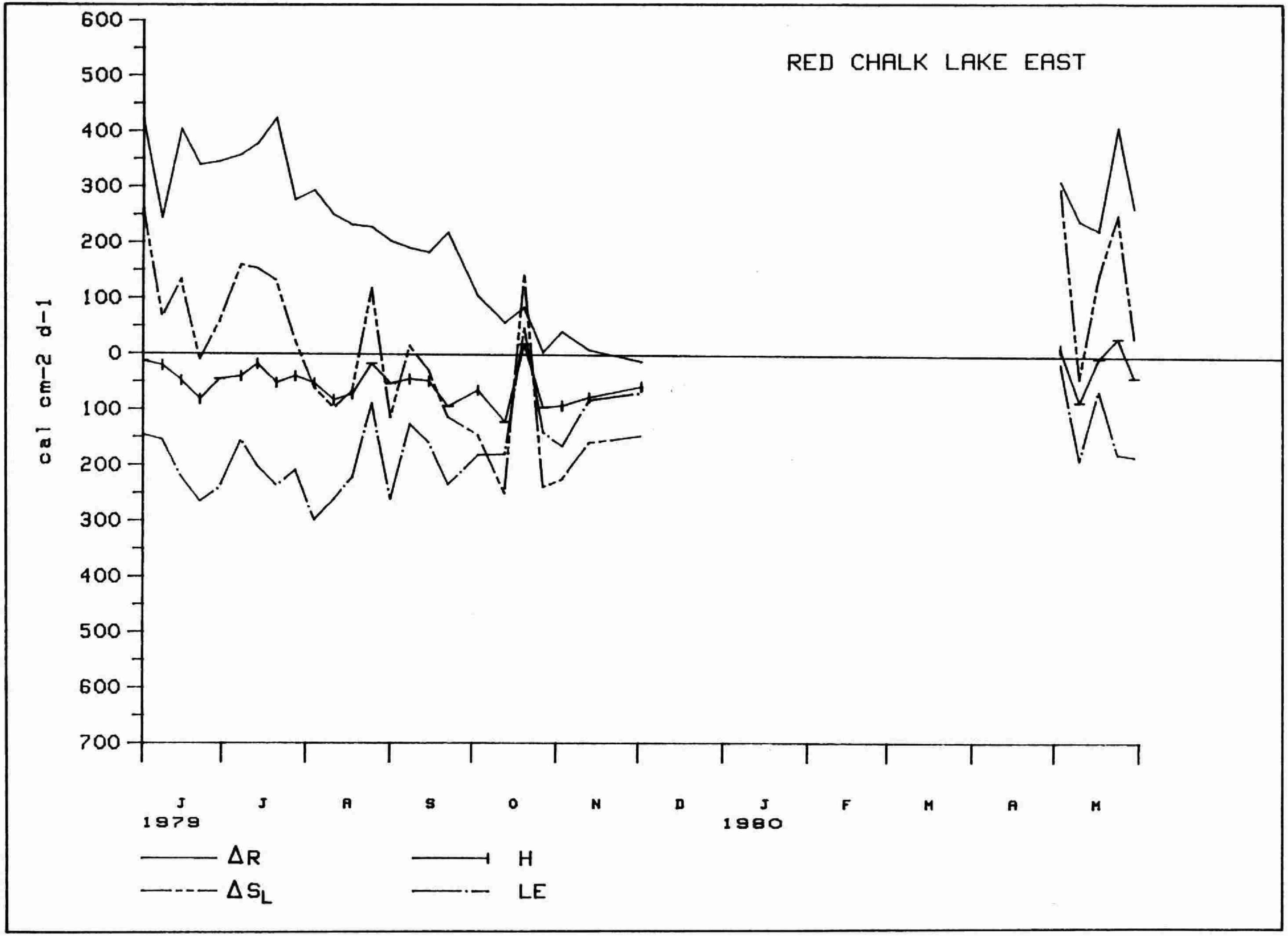

RED CHALK LAKE EAST
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
J
A
S
O
N
D
J
F
M
A
M
1979
1980
ΔR
H
ΔS_L
LE

FIGURE 162

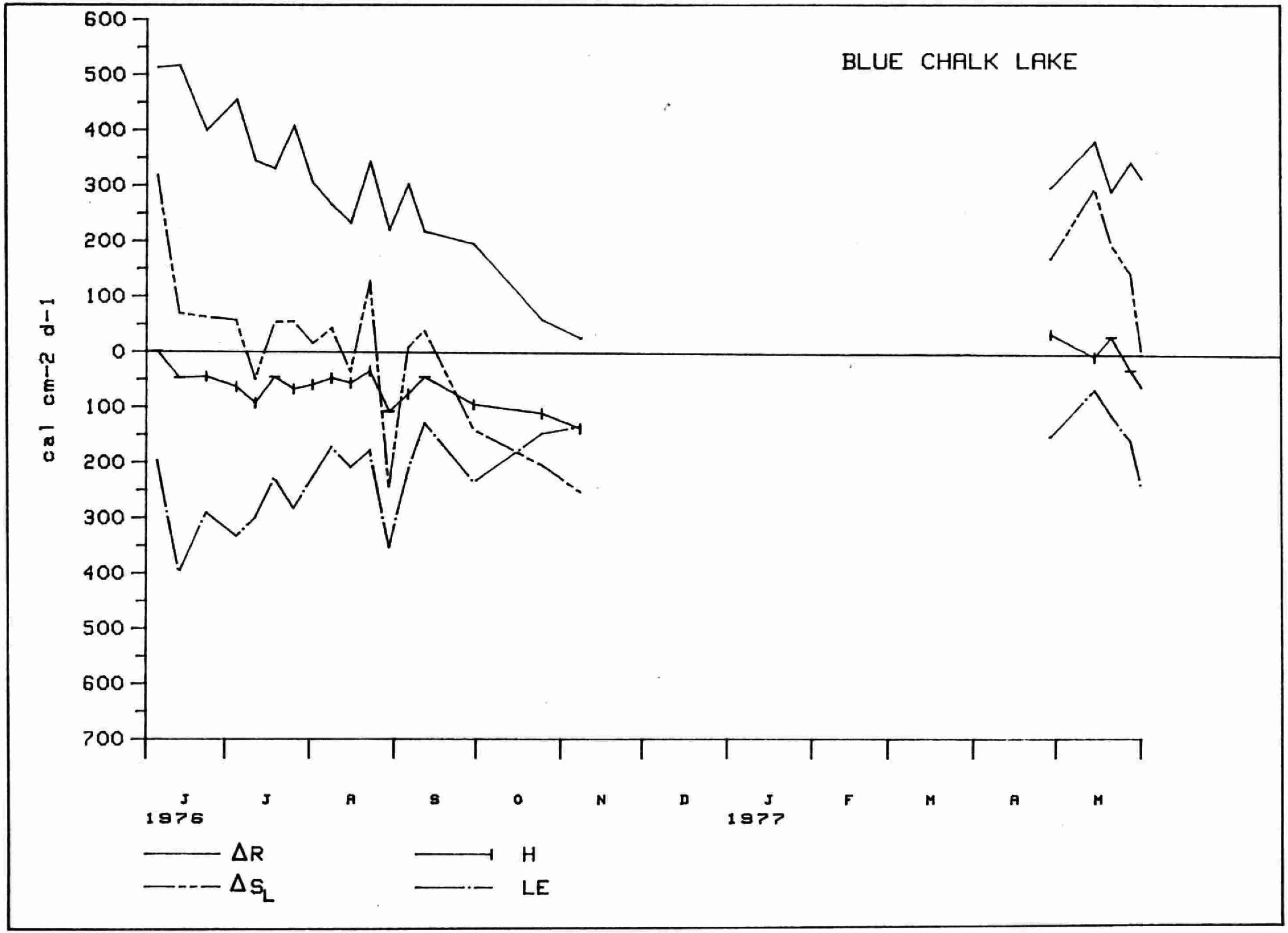

BLUE CHALK LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
1976
J
A
S
O
N
D
J
1977
F
M
A
M
ΔR
ΔSL
H
LE

FIGURE 163

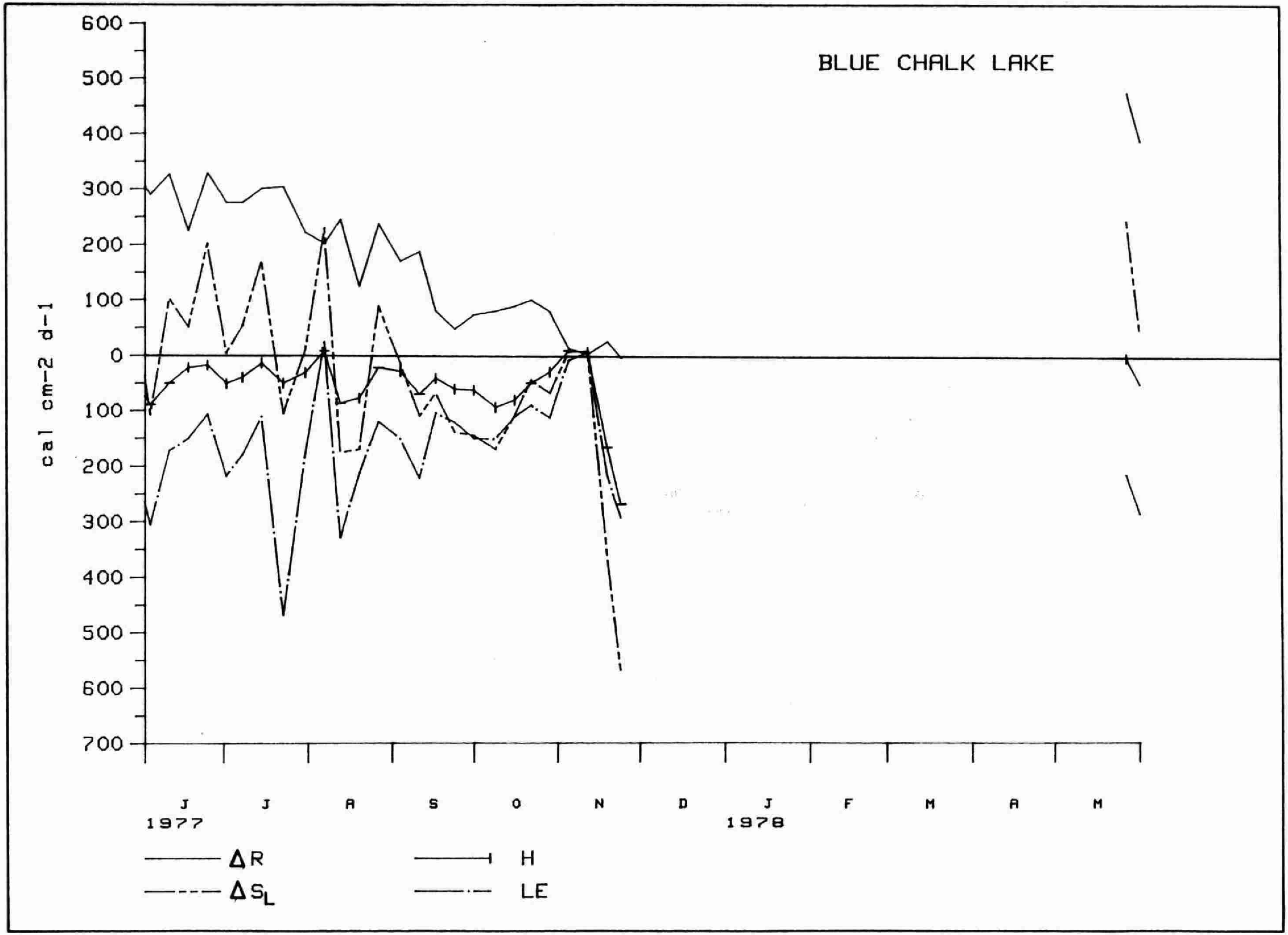

BLUE CHALK LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J
1977
J
A
S
O
N
D
J
1978
F
M
A
M
ΔR
H
ΔS_L
LE

FIGURE 164

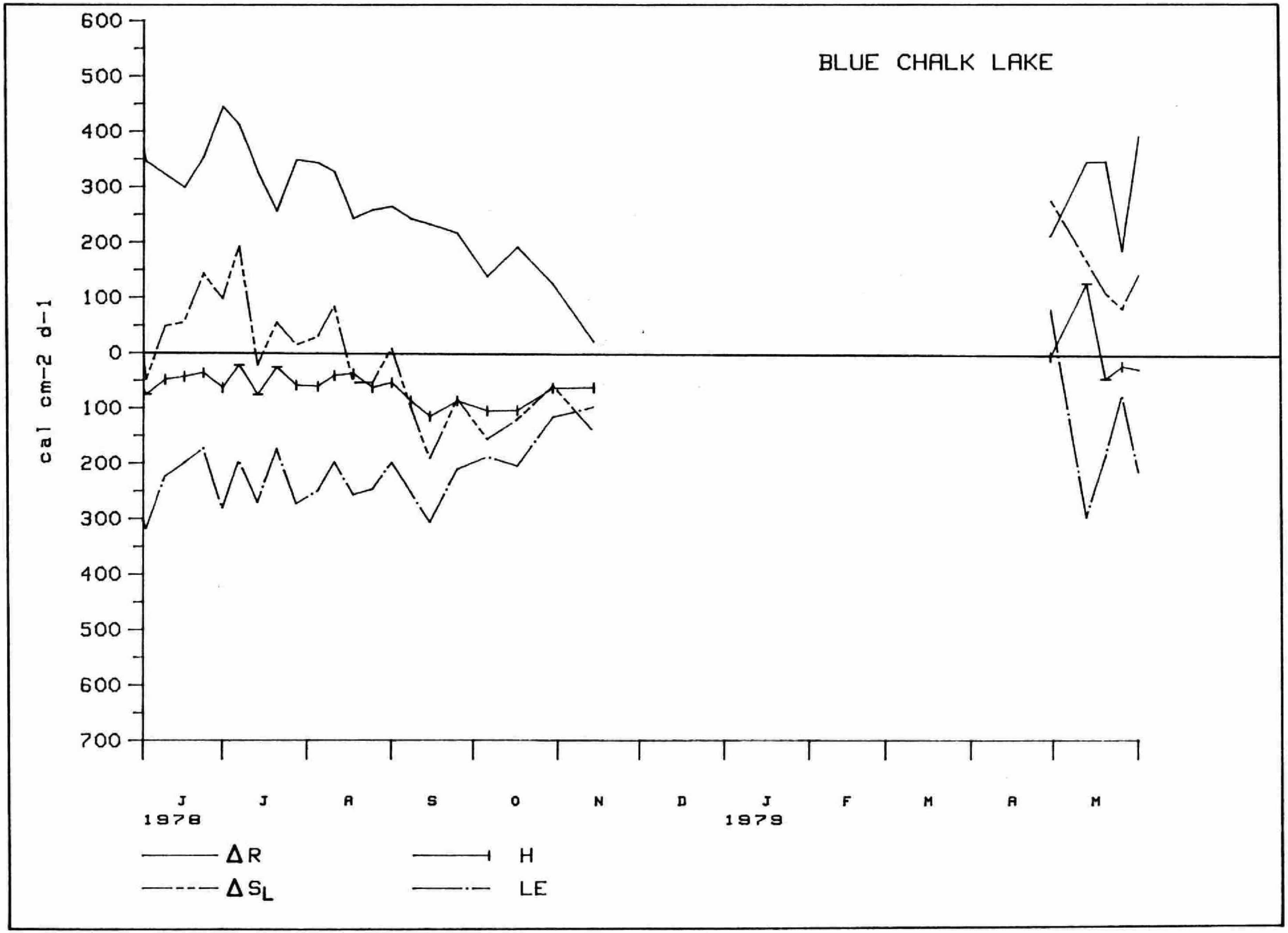

BLUE CHALK LAKE
cal cm-2 d-1
600
500
400
300
200
100
0
100
200
300
400
500
600
700
J J A S O N D J F M A M
1978
1979
ΔR
H
ΔS_L
LE

FIGURE 165

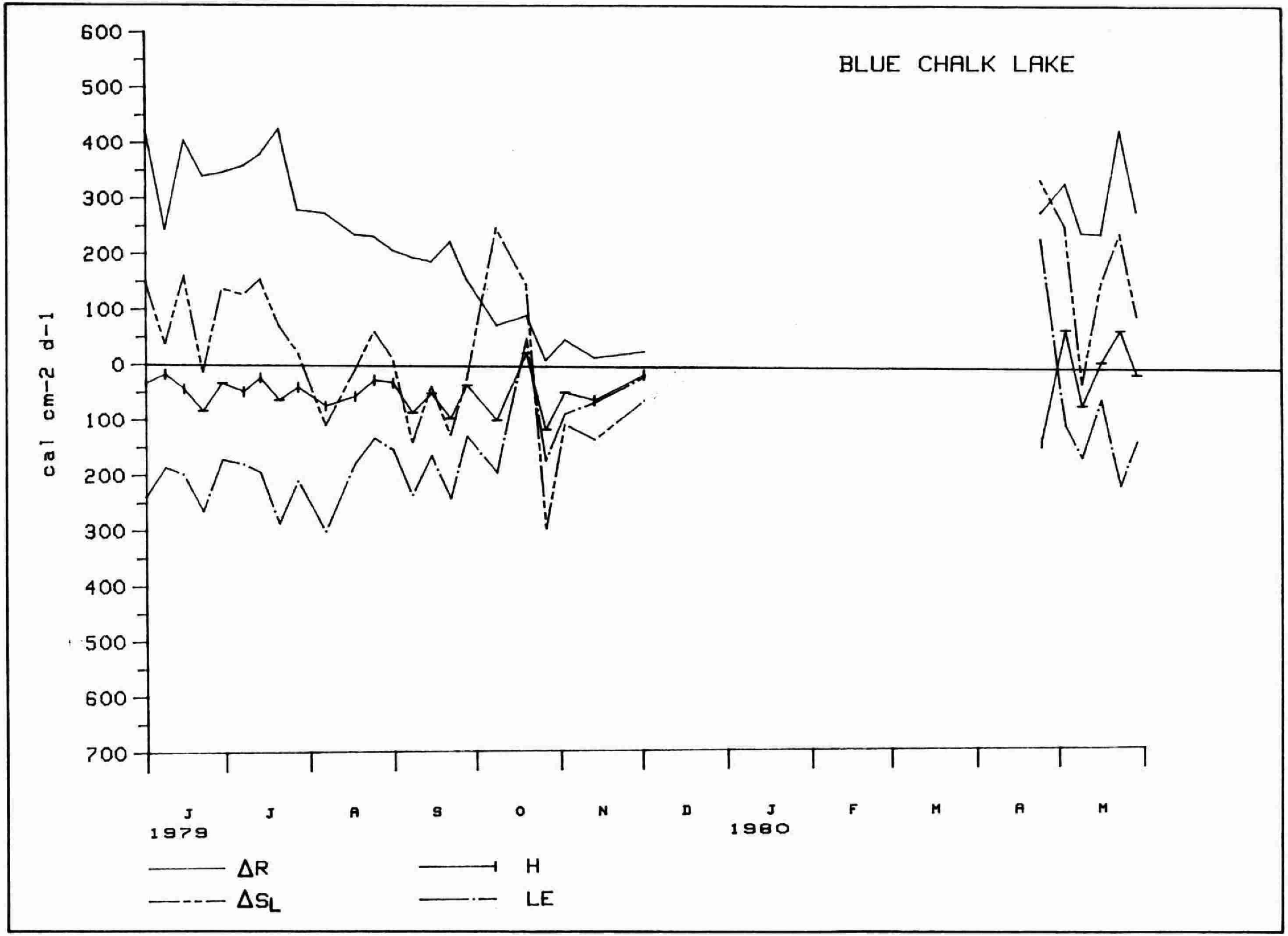

BLUE CHALK LAKE
600
500
400
300
200
100
0
100
200
300
400
500
600
700
cal cm-2 d-1
J
1979
J
A
S
O
N
D
J
1980
F
M
A
M
ΔR
ΔS_L
H
LE

FIGURE 166

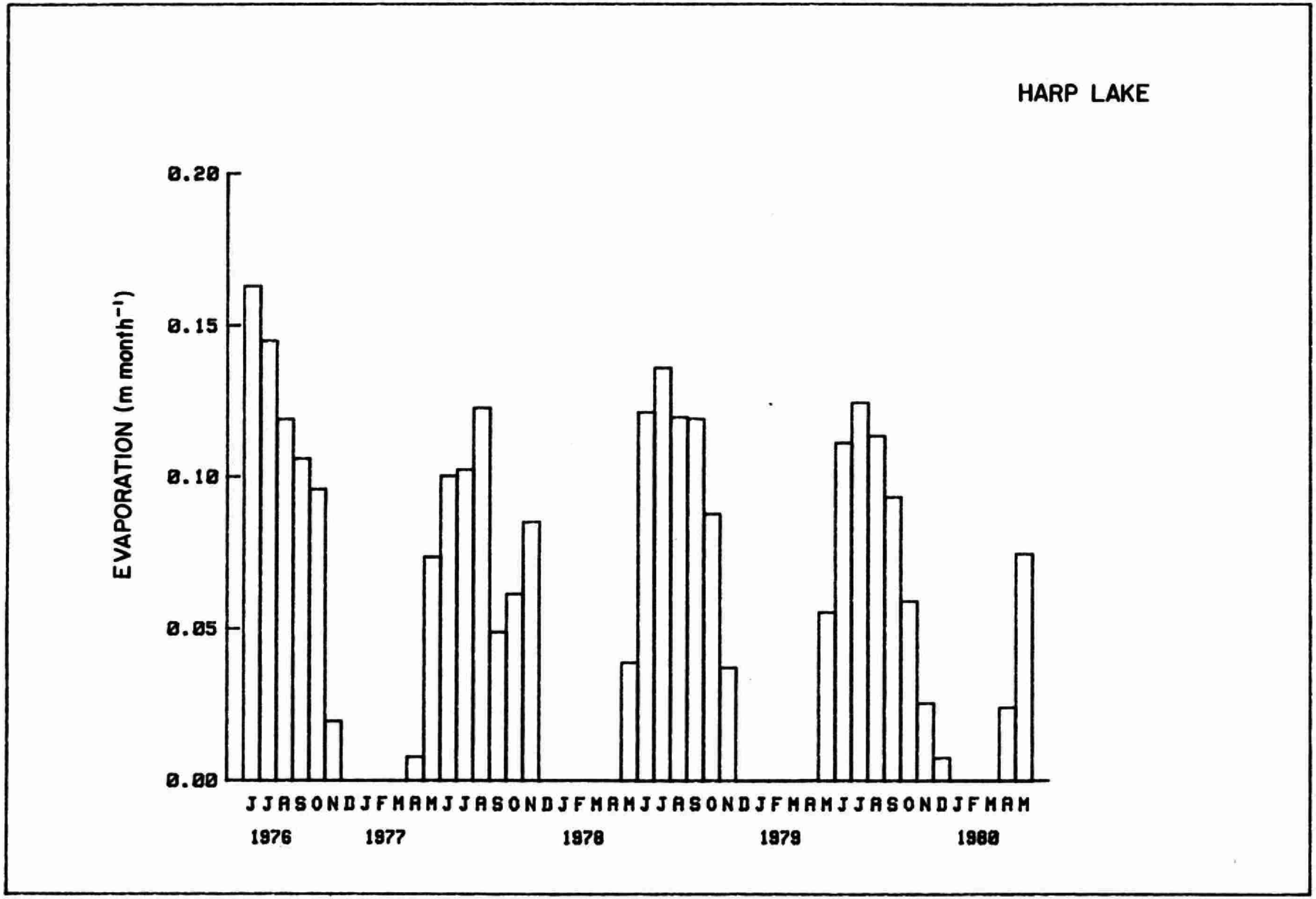

HARP LAKE
EVAPORATION (m month⁻¹)
0.20
0.15
0.10
0.05
0.00
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 167

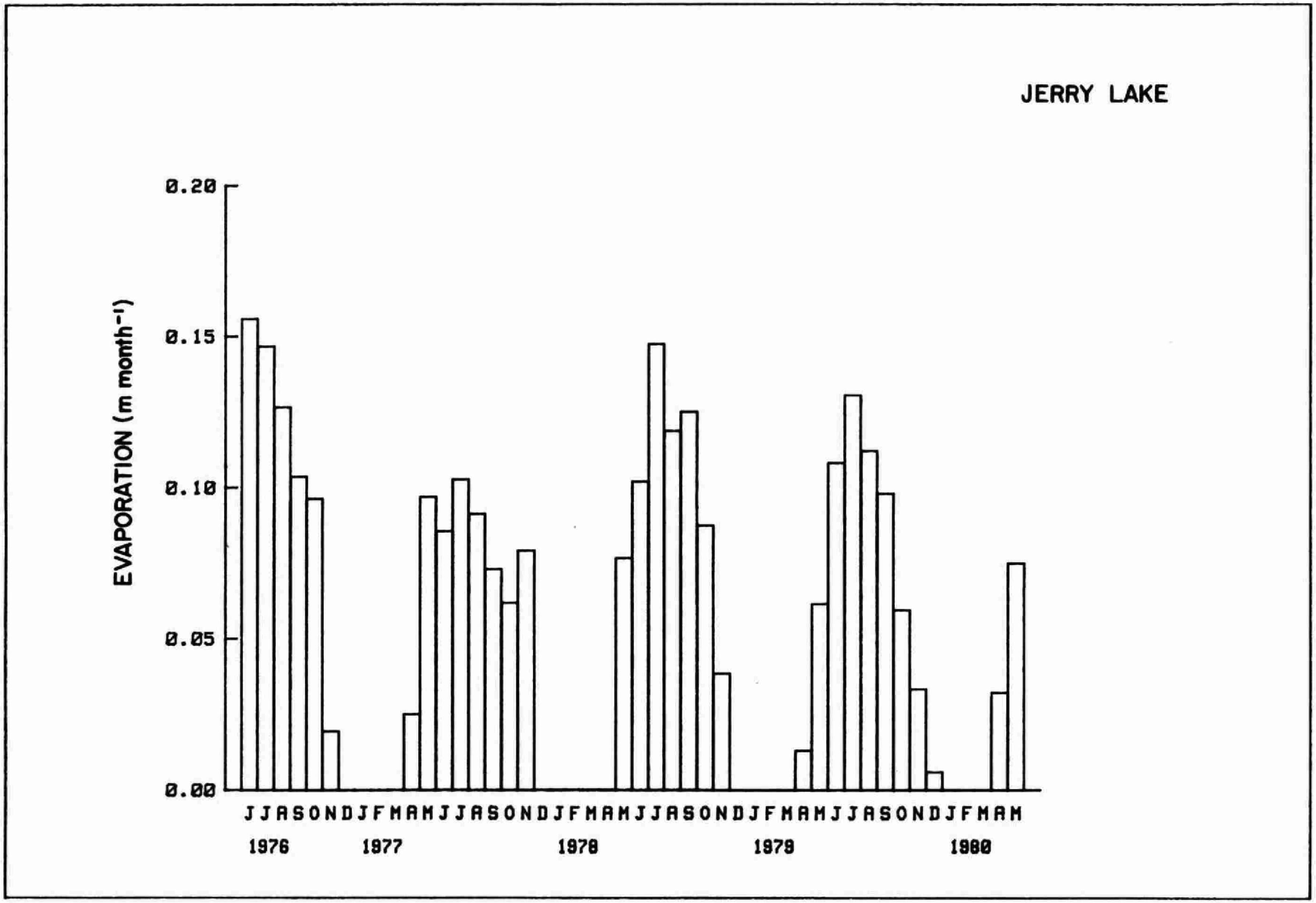

JERRY LAKE
EVAPORATION (m month⁻¹)
0.20
0.15
0.10
0.05
0.00
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 168

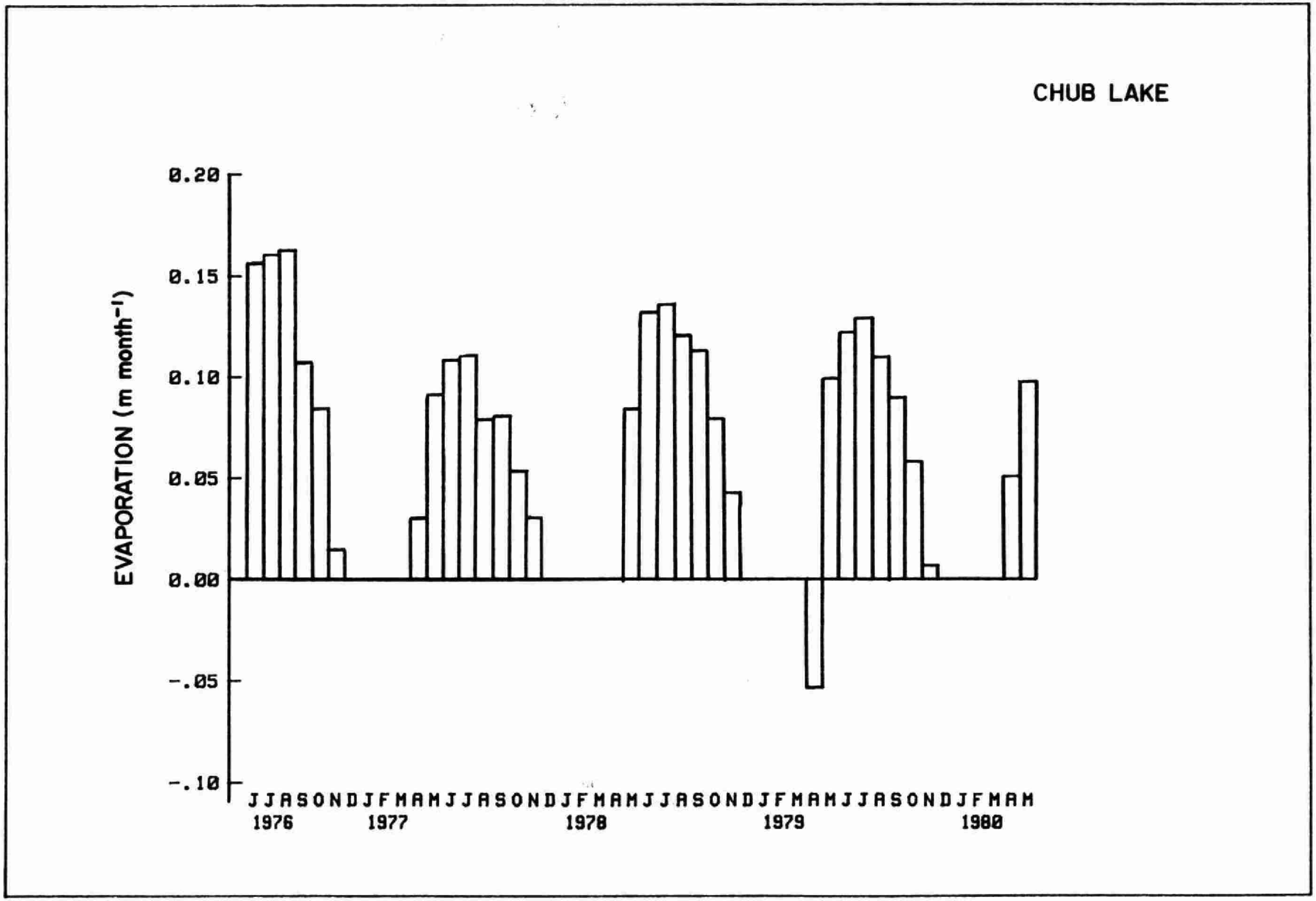

CHUB LAKE
EVAPORATION (m month⁻¹)
0.20
0.15
0.10
0.05
0.00
-.05
-.10
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 169

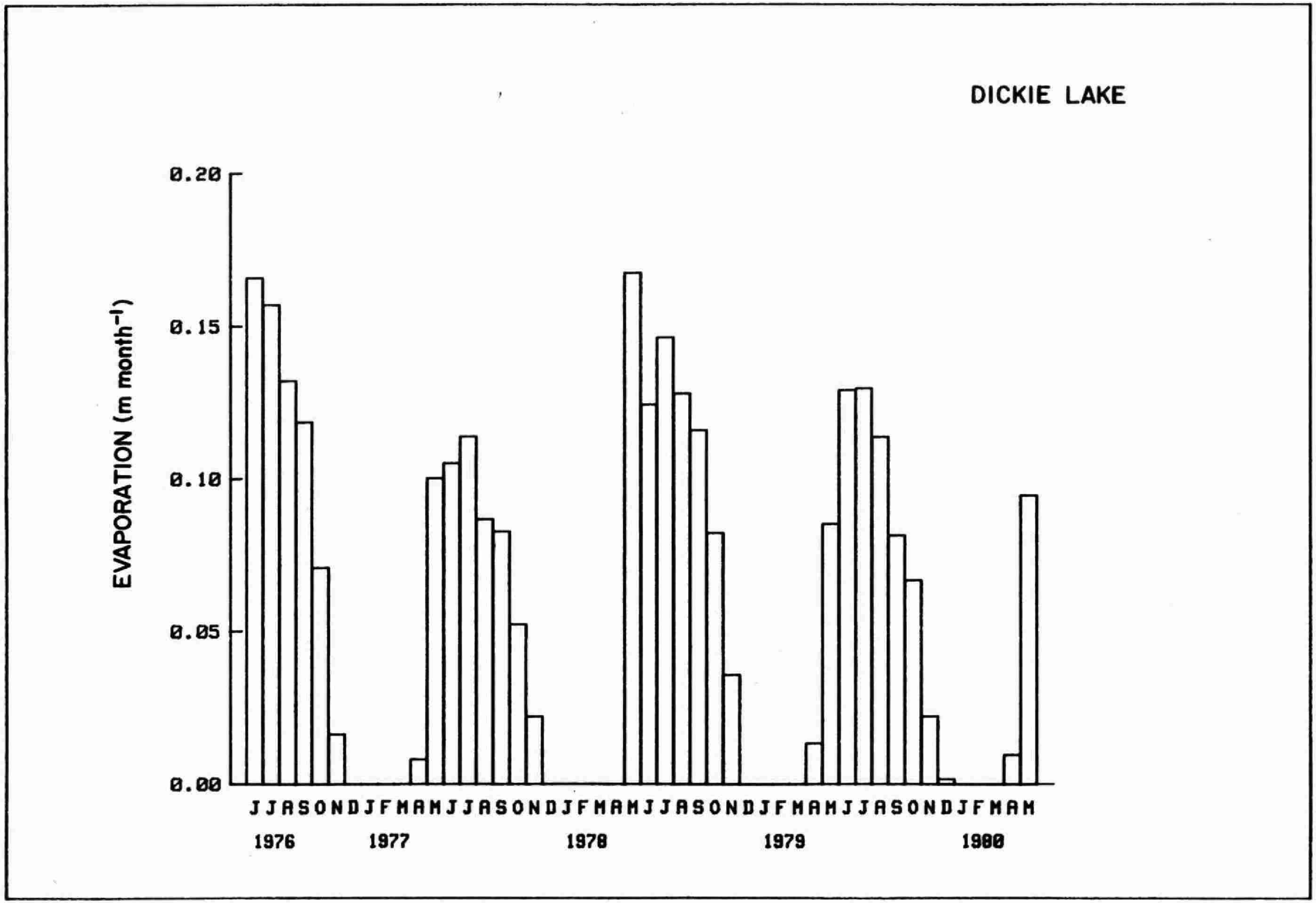

DICKIE LAKE
EVAPORATION (m month^{-1})
0.20
0.15
0.10
0.05
0.00
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 170

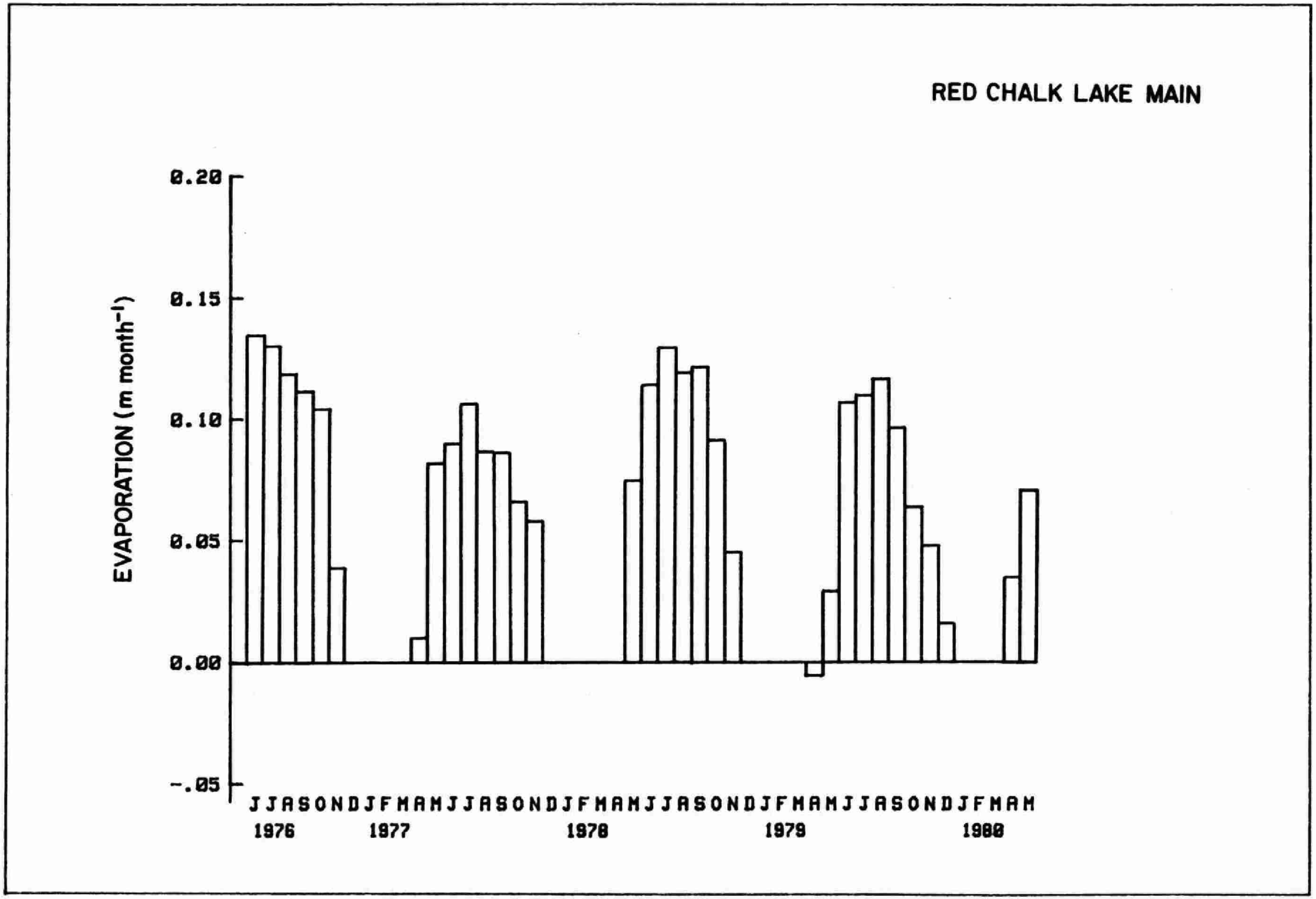

RED CHALK LAKE MAIN
EVAPORATION (m month⁻¹)
0.20
0.15
0.10
0.05
0.00
-.05
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 171

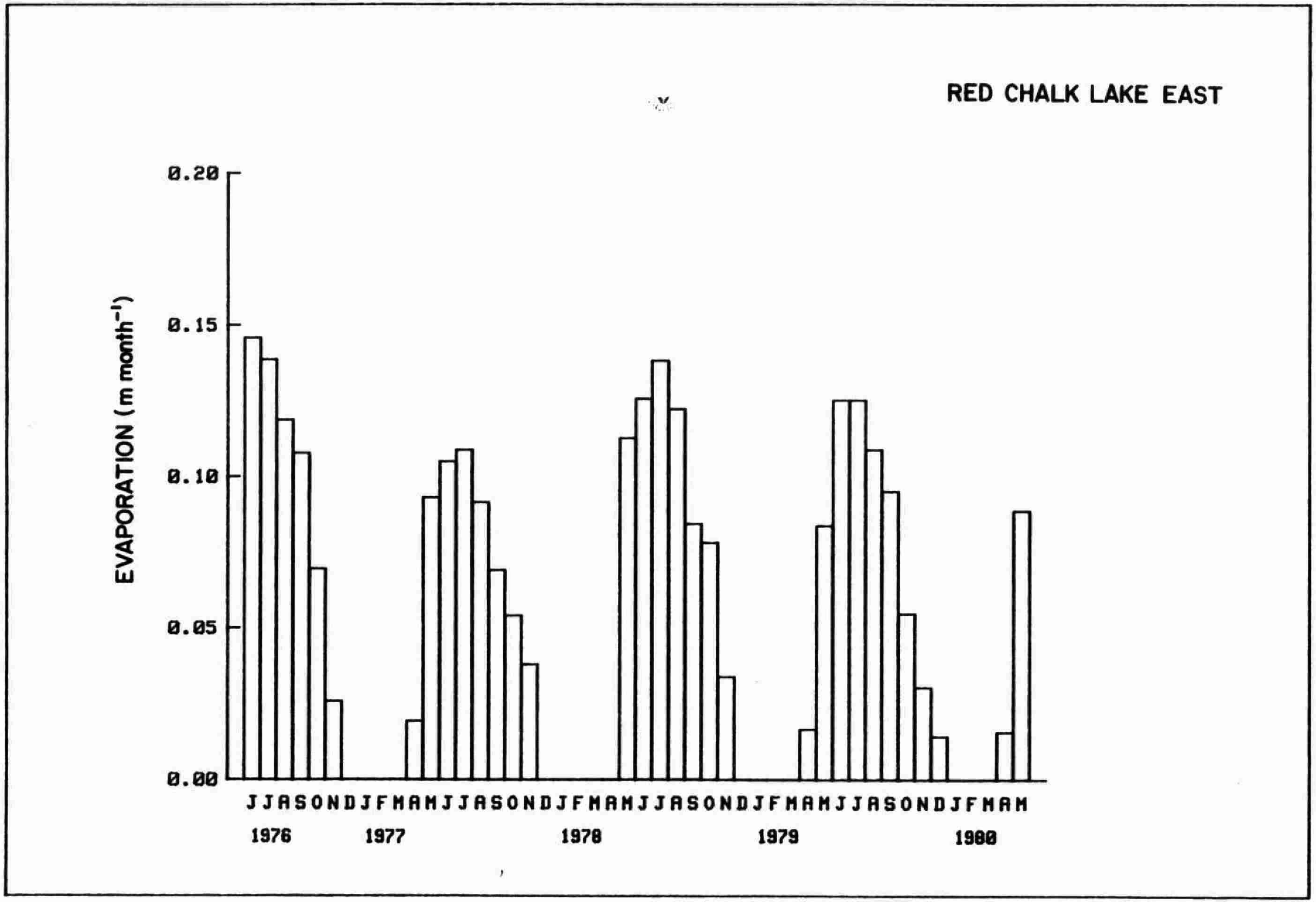

RED CHALK LAKE EAST
EVAPORATION (m month⁻¹)
0.20
0.15
0.10
0.05
0.00
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 172

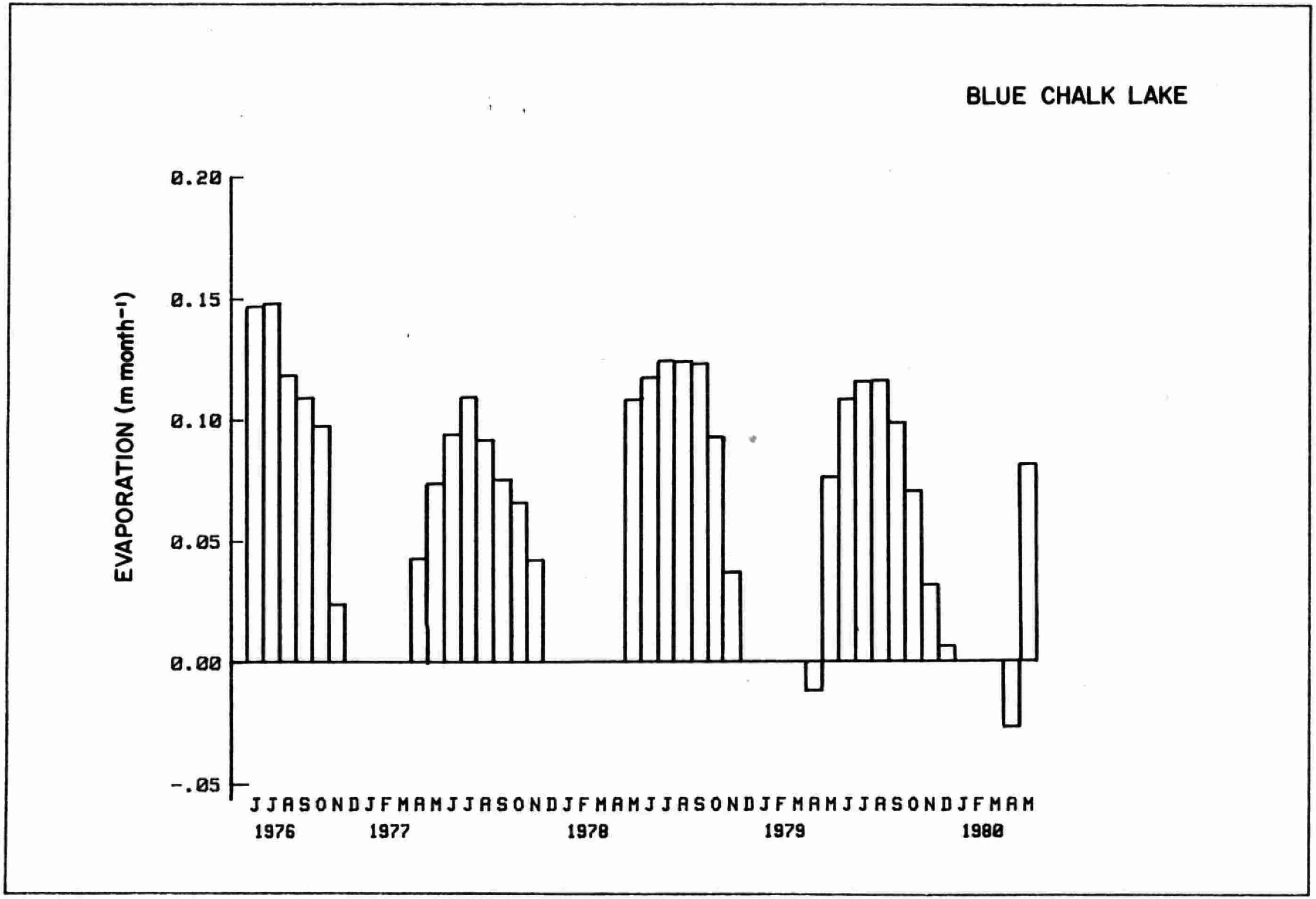

BLUE CHALK LAKE
EVAPORATION (m month⁻¹)
0.20
0.15
0.10
0.05
0.00
-.05
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M
1976
1977
1978
1979
1980

FIGURE 173

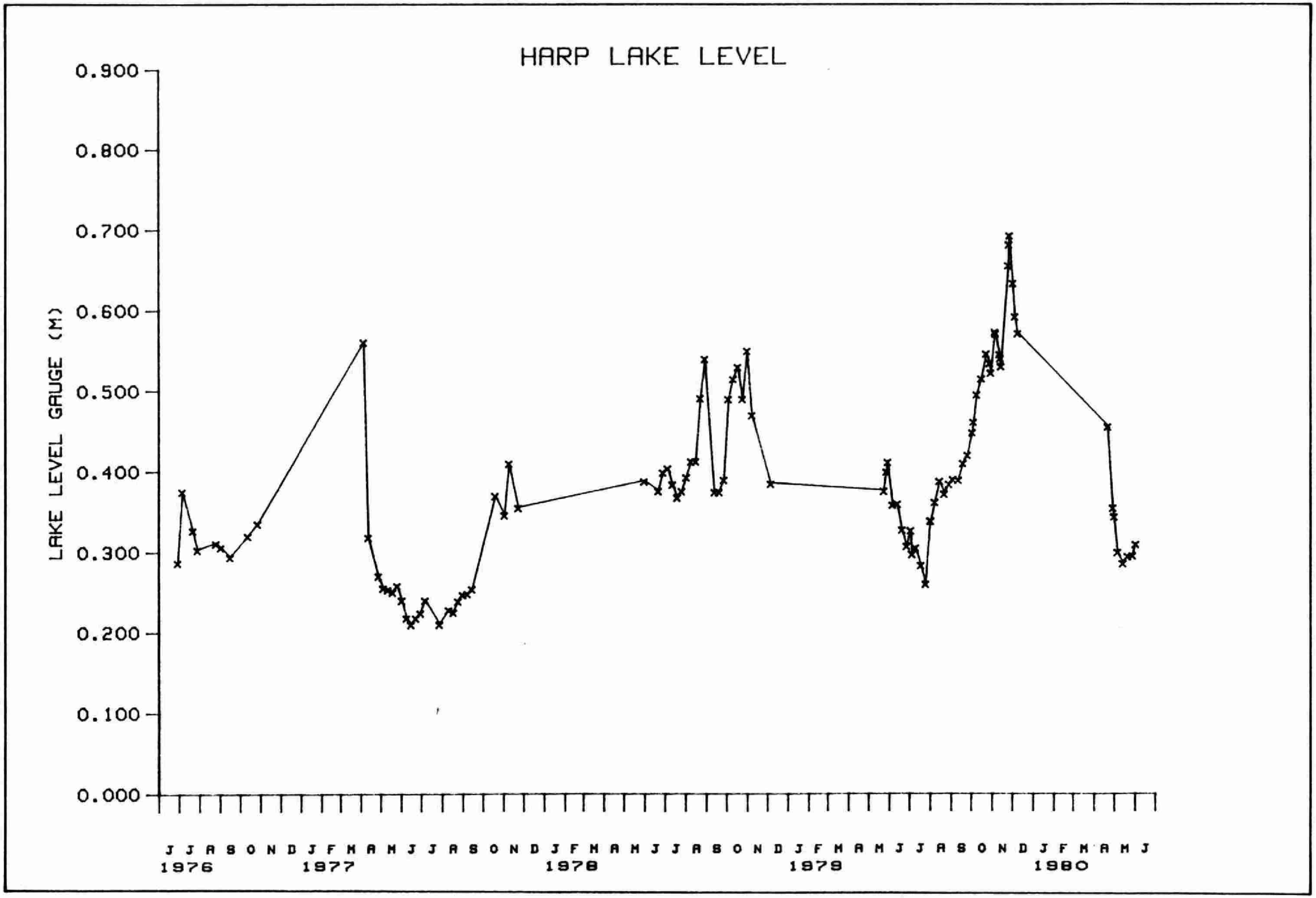

HARP LAKE LEVEL
LAKE LEVEL GAUGE (M)
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
1976
1977
1978
1979
1980

FIGURE 174

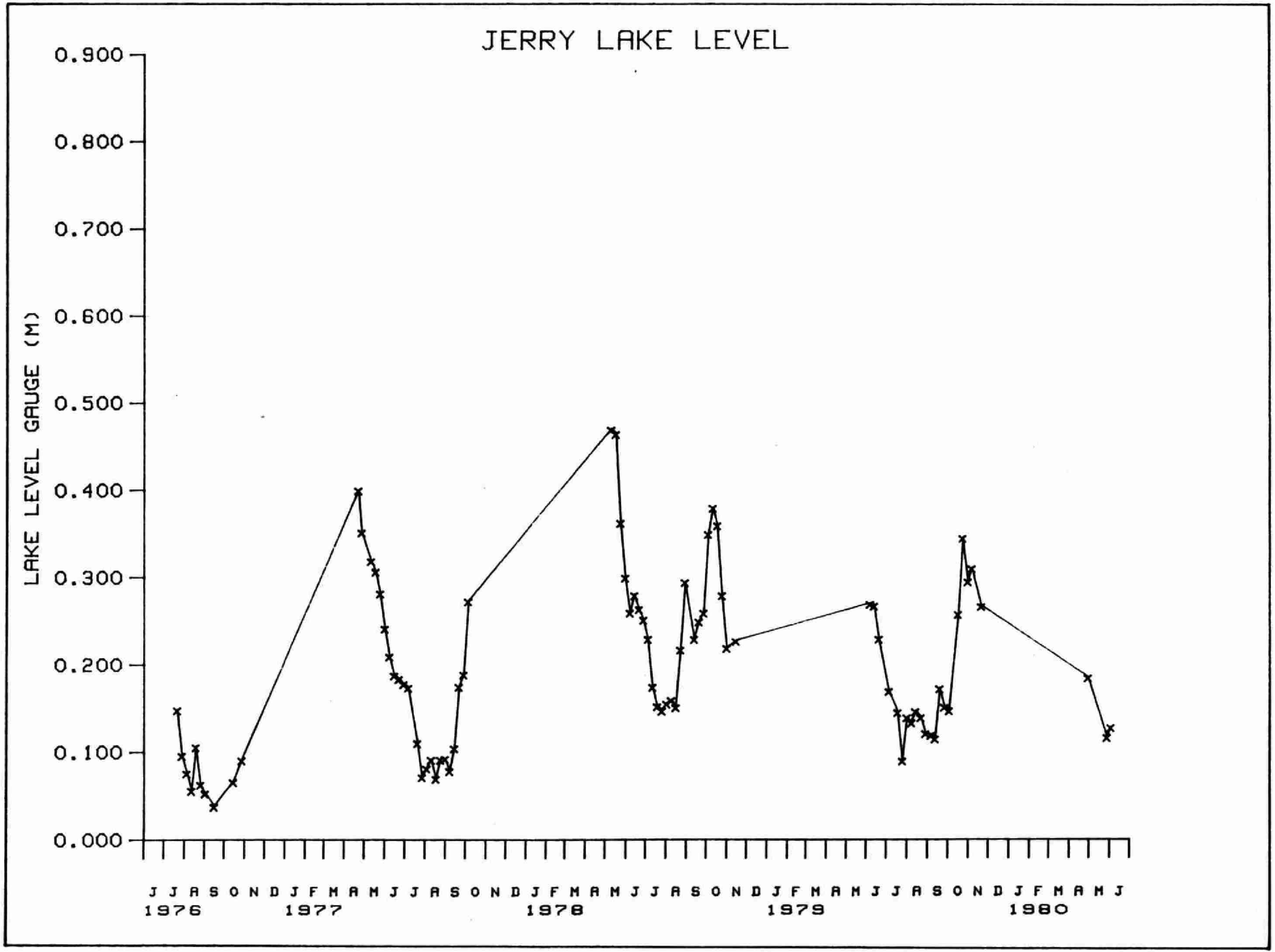

JERRY LAKE LEVEL
LAKE LEVEL GAUGE (M)
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
1976
1977
1978
1979
1980

FIGURE 175

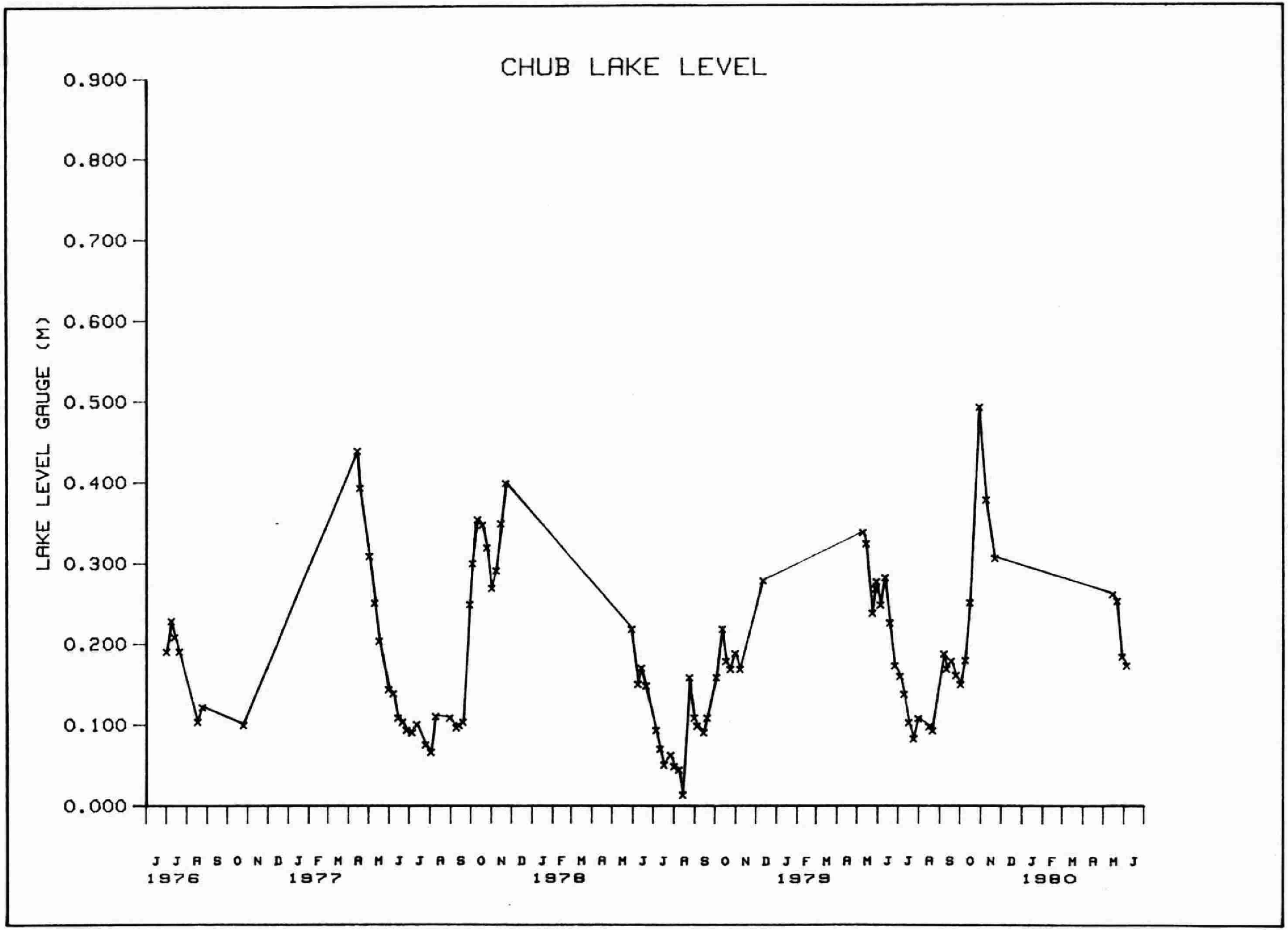

CHUB LAKE LEVEL
LAKE LEVEL GAUGE (M)
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
1976
1977
1978
1979
1980

FIGURE 176

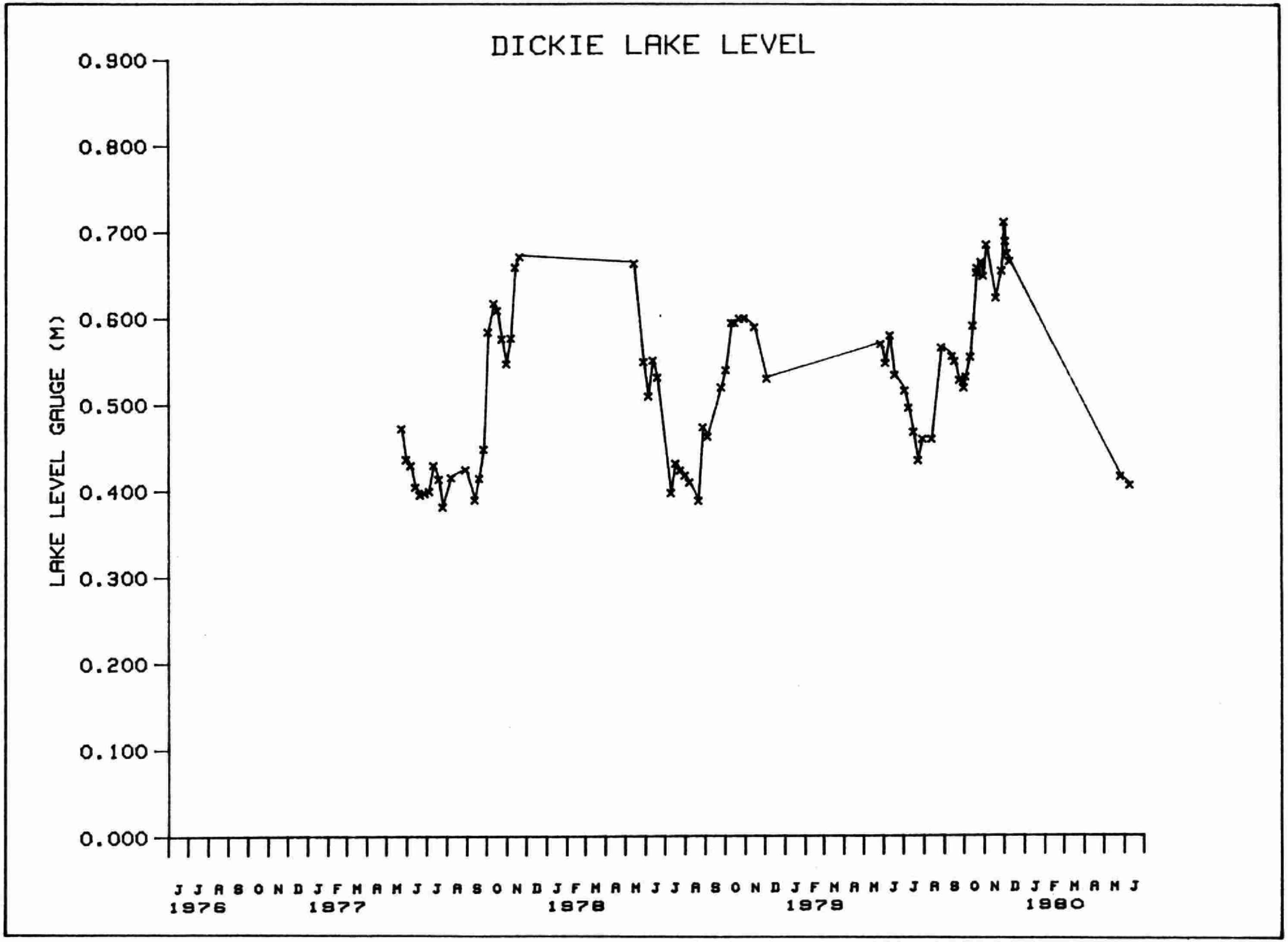

DICKIE LAKE LEVEL
LAKE LEVEL GAUGE (M)
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
1976
1977
1978
1979
1980

FIGURE 177

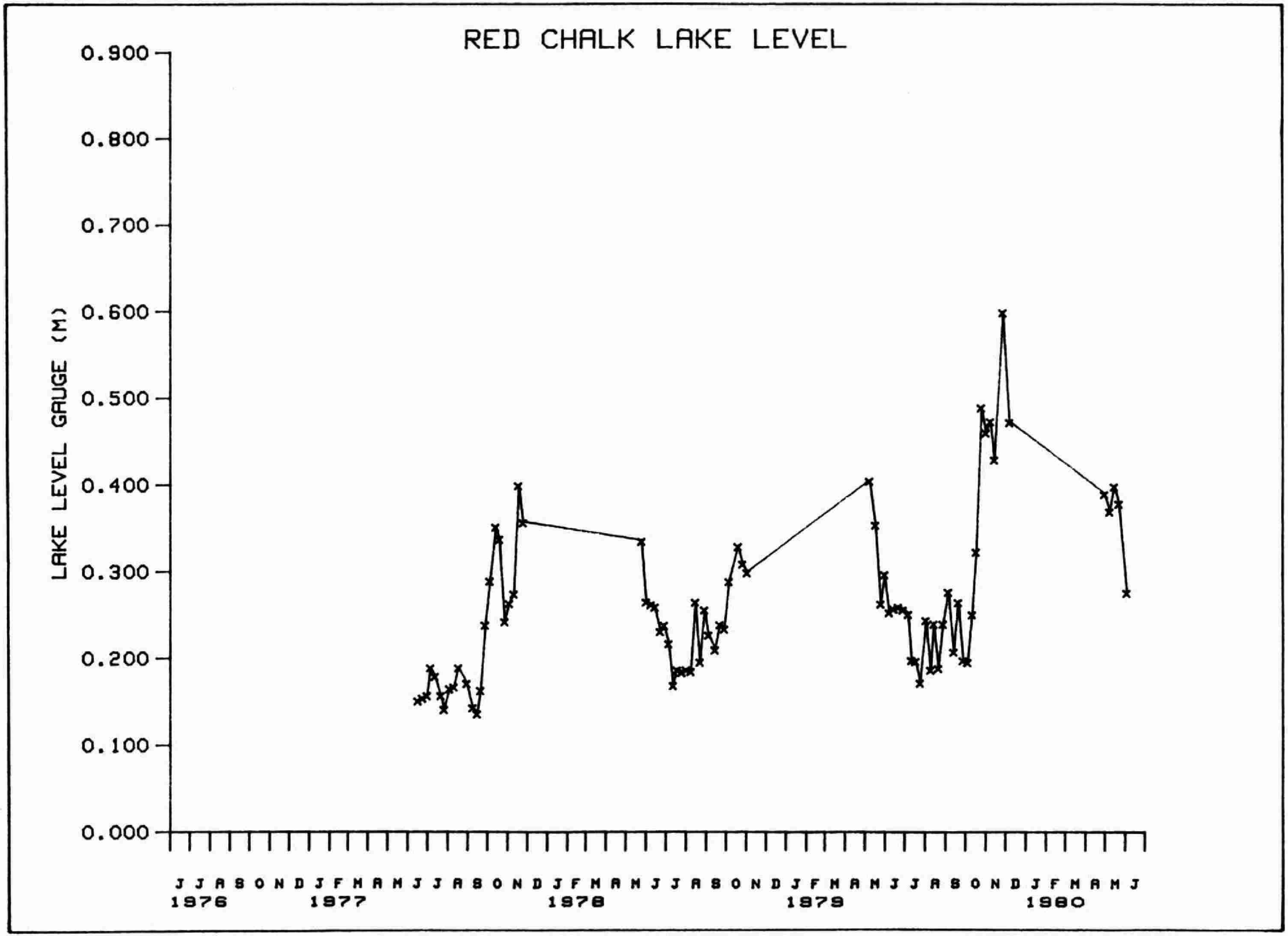

RED CHALK LAKE LEVEL
LAKE LEVEL GAUGE (M)
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
1976
1977
1978
1979
1980

FIGURE 178

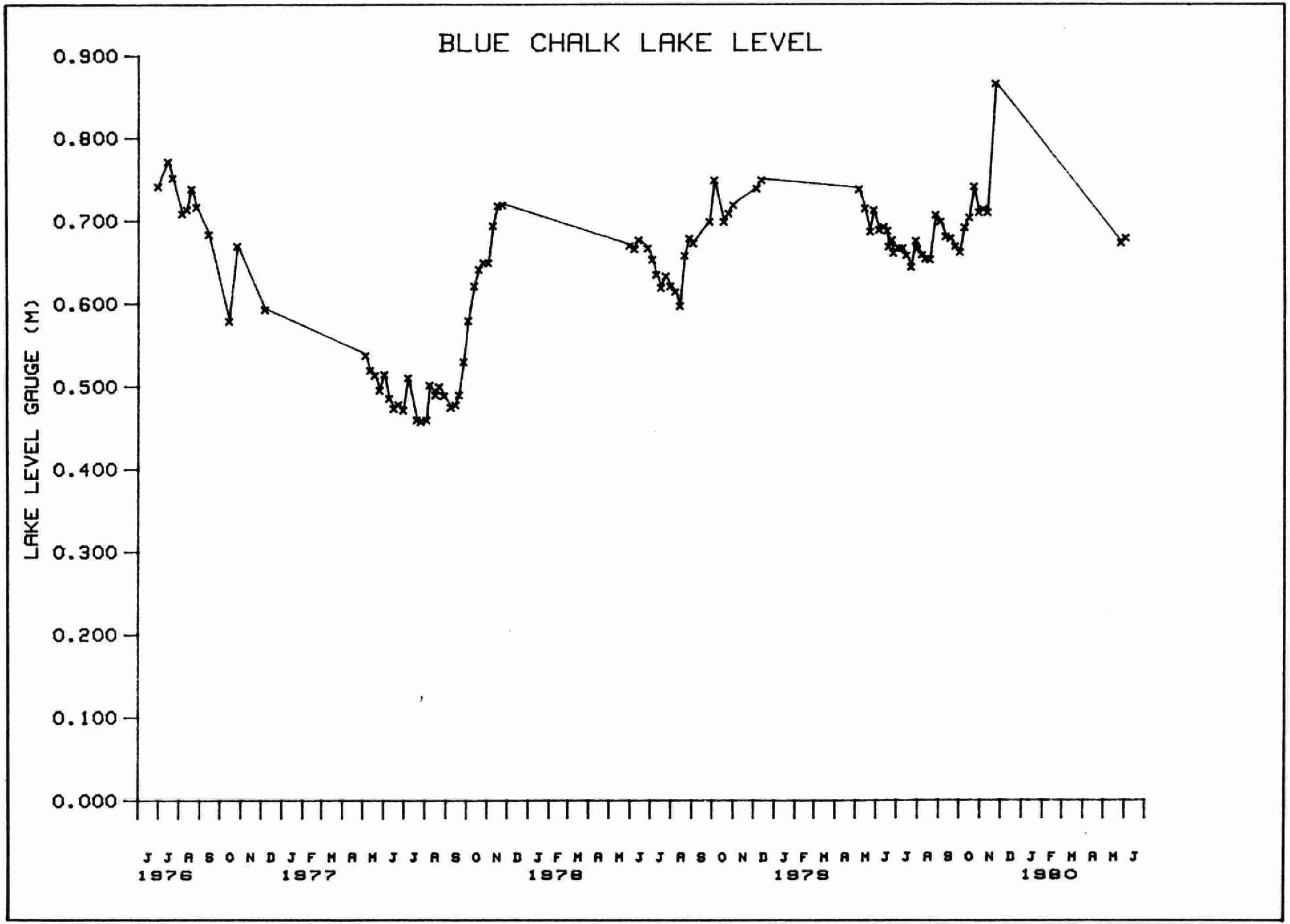

BLUE CHALK LAKE LEVEL
LAKE LEVEL GAUGE (M)
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
1976
1977
1978
1979
1980

FIGURE 179

	DATE DUE		